Vol. 998 Number 2

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 9, 1980

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

September 9, 1980 Volume 998 Number 2

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR § 1.56

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order under 37 CFR § 1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR § 1.258(a). See e.g., *Norton v. Curtiss*, 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer v. Kaufman*, 59 CCPA 1261, 465 F. 2d 915, 175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference.

In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: Aug. 11, 1980.

July 1980 Classification Orders

The reclassifications covered by the classification changes below became effective July 1980. These changes will be printed monthly. Addenda information will continue to be printed quarterly.

Classification Order 739, effective July 18, 1980:

	Class	Subclasses
Abolished	123	28–35; 75; 97–118; 119–142; 148 191.
Established	123	250–671.

Classification Order 740, effective July 21, 1980:

Abolished	212	1–70; 144; 145.
Established	[1] 212	142.1; 146–271.
	414	684.3.

Classification Order 741, effective July 21, 1980:

Abolished	428	474–479.
Established	428	473.5; 474.4; 474.7; 474.9; 475.2; 475.5; 475.8; 476.1; 476.3; 476.6; 476.9; 477.4; 477.7; 478.2; 478.4; 478.8; 479.3; 479.6.

Classification Order 742, effective July 22, 1980:

Abolished	73	194; 205–214; 228–231.
Established	73	861; 861.01–861.00; 861.11–861.19; 861.21–861.29; 861.31–861.39; 861.41–861.49; 861.51–861.59; 861.61–861.69; 861.71–861.79; 861.81–861.89; 861.91–861.94.

Classification Order 743, effective July 22, 1980:

Abolished	244	118.4.
Position changes	244	118.3; 118.5.
Title changes	244	118.1; 118.3; 118.6.

Classification Order 744, effective July 23, 1980:

Abolished	254	51–83; 135–198.
Established	182	231–241.
	[2] 254	199–417; Cross-reference art collections, 900–903.
	294	132–136.
Position change	182	73–75.
	254	134.3–134.7.
Title changes	182	74.
	254	Class title; 134.3.

[1] Class 212 Definitions modified and reprinted to include all Addenda issued through July 31, 1980, separately available.
[2] Class 254 Definitions modified and reprinted to include all Addenda issued through July 31, 1980, separately available.

Classification Definition Revisions

A system has been developed to facilitate use of selected Classification Definitions by updating the format and incorporating all previously issued Addenda. As these Revisions become available, notification will be printed in the OFFICIAL GAZETTE.

At present, the following Class Revisions may be obtained. Users are advised to discard all Addenda held for these classes.

Class 212, Traversing Hoists;
Class 254, Implements or Apparatus for Applying Pushing or Pulling Force; and
Class 278, Land Vehicles, Animal Draft Appliances.

ALFRED C. MARMOR,
Administrator for Documentation.

Aug. 7, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,763,833, Re. S.N. 111,640, Filed Jan. 14, 1980, Cl. 123/321 A, FUEL INJECTION SYSTEM, Todd L. Rachel, Owner of Record: *The Bendix Corporation, Southfield, Mich.*, Attorney or Agent: Markell Seitzman, Ex. Gp.: 342

3,920,510, Re. S.N. 153,660, Filed May 27, 1980, Cl. 162/162, PRESSURE- AND HEAT-SENSITIVE COPYING PAPER, Yoshihiro Hatano, et al., Owner of Record: *Yamamoto Kagaku Gosei Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: James E. Armstrong, III, Ex. Gp.: 173

4,117,403, Re. S.N. 162,051, Filed Jun. 23, 1980, Cl. 324/240, SINGLE MAGNETIC STRAY FIELD SENSOR WHOSE SIGNALS ARE DIFFERENTLY ATTENUATED IN TWO CHANNELS AND THEN COMPARED, Friedrich M. O. Forster, et al., Owner of Record: *Inventor,* Attorney or Agent: George J. Netter, Ex. Gp.: 252

4,132,557, Re. S.N. 162,075, Filed Jun. 23, 1980, Cl. 106/100, TECHNIQUE FOR HANDLING AND TRANSPORTING CEMENT, Arthur D. Saylor, Owner of Record: *Inventor,* Attorney or Agent: George J. Netter, Ex. Gp.: 113

Prior Art Cited by Applicants

Effective immediately, applicants are encouraged to use new form PTO–1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citations, supersedes form PTO–3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO–1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines *and* has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO–892.

The reference designations "AA," "AB," etc. (referring to Applicant's reference *A*, Applicant's reference *B*, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO–1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

Sheet _____ of _____

FORM PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	SERIAL NO.
APPLICANT	
FILING DATE	GROUP

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER PRIOR ART *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	AR		
	AS		
	AT		

EXAMINER	DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

USCOMM-DC 80-3985

PATENT NOTICES

Certificates of Correction for the Week of Sept. 9, 1980

Re. 29,916	4,187,136	4,202,654	4,206,879
D. 249,128	4,192,948	4,202,813	4,206,893
D. 249,881	4,195,146	4,202,851	4,206,937
4,027,456	4,195,690	4,202,899	4,207,139
4,047,519	4,195,931	4,202,919	4,207,246
4,099,290	4,197,701	4,202,932	4,207,271
4,113,585	4,198,100	4,203,039	4,207,650
4,113,689	4,198,592	4,203,073	4,207,711
4,118,396	4,198,940	4,203,319	4,207,883
4,124,591	4,198,944	4,203,460	4,207,923
4,137,270	4,199,420	4,204,016	4,207,938
4,140,721	4,199,534	4,204,643	4,208,238
4,152,760	4,199,608	4,205,132	4,208,281
4,162,252	4,200,381	4,205,310	4,208,580
4,164,050	4,200,492	4,205,345	4,208,732
4,165,267	4,200,576	4,205,647	4,208,740
4,171,832	4,200,672	4,205,701	4,208,889
4,181,845	4,200,744	4,205,872	4,208,970
4,185,013	4,201,454	4,206,204	4,209,824
4,186,194	4,202,219	4,206,306	4,211,908
4,186,616	4,202,435	4,206,536	

Dedications

Re. 28,751.—*Jack Ball*, Chesterland, Ohio. X-AND GAMMA-RAY SENSITIVE IMAGE INTENSIFICATION TUBE. Patent dated Mar. 30, 1976. Dedication filed June 23, 1980, by the assignee, *Varian Associates, Inc.*

Hereby dedicates to the Public all claims of said patent.

4,123,262.—*Paul Joseph Cascone*, New Rochelle, N.Y. DENTAL GOLD ALLOY. Patent dated Oct. 31, 1978. Dedication filed July 10, 1980, by the assignee, *Pennwalt Corporation.*

Hereby dedicates to the Public the entire term of said patent.

4,154,721.—*Leo L. Valdiserri*, Belpre, Ohio and *Murray S. Cohen*, Convent Station, N.J. FLAME-RETARDANT PHOSPHONATE COMPOSITION. Patent dated May 15, 1979. Dedication filed June 24, 1980, by the assignee, *Borg-Warner Corporation.*

Hereby dedicates to the Public claims 1 and 6 of said patent.

Disclaimers

3,688,346.—*Wolfgang Johst*, Gevelsberg and *Herbert Etz*, Wuppertal-Langerfeld, Germany. APPARATUS FOR MANUFACTURING TAMPONS. Patent dated Sept. 5, 1972. Disclaimer filed Aug. 27, 1979, by the assignee, *Dr. Carl Hahn, G.m.b.H.*

Hereby enters this disclaimer to claim 1 of said patent.

3,794,914.—*Edward E. Aslan*, Plainview, N.Y. RADIATION DETECTOR EMPLOYING RESISTIVE CONNECTED THERMOCOUPLE ELEMENTS. Patent dated Feb. 26, 1974. Disclaimer filed June 30, 1980, by the assignee, *Narda Microwave Corporation.*

The term of this patent subsequent to February 8, 1989, has been disclaimed.

4,050,098.—*William H. Seipp*, Bettendorf, Iowa. SELF-ADDRESSING MODULES FOR PROGRAMMABLE CONTROLLER. Patent dated Sept. 20, 1977. Disclaimer filed July 25, 1980, by the assignee, *Gulf & Western Industries, Inc.*

Hereby enters this disclaimer to claims 3 and 4 of said patent.

4,093,110.—*Peter Walton Johnson*, Toronto, Canada. NOISE AND FOULING REDUCER FOR POWER-ACTUATED TOOL. Patent dated June 6, 1978. Disclaimer filed July 14, 1980, by the assignee, *Olin Corporation.*

Hereby enters this disclaimer to claim 10 of said patent.

4,099,951.—*Helmut Pieper*, Lohr, Germany. GLASS MELTING FURNACE AND PROCESS WITH RECIRCULATION OF MOLTEN GLASS. Patent dated July 11, 1978. Disclaimer filed May 1, 1980, by the assignee, *Sorg GmbH & Co. KG.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 6 and 7 of said patent.

4,110,784.—*John Gordon Amery*, Quincy, Ill. and *Thomas William Burrus*, Indianapolis, Ind. NOISE REDUCTION APPARATUS. Patent dated Aug. 29, 1978. Disclaimer filed July 10, 1980, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

4,153,431.—*John T. Higgins*, Trail, Canada. PROCESS AND APPARATUS FOR CLEANING PRILLING TOWER EFFLUENT. Patent dated May 8, 1979. Disclaimer filed July 22, 1980, by the assignee, *Cominco, Ltd.*

Hereby enters this disclaimer to claims 1–4 of said patent.

Disclaimer and Dedication

4,006,997.—*Jean Friberg*, Bourg La Reine and *Jean-Marie Merigoux*, Palaiseau, France. SUPERSONIC CENTRIFUGAL COMPRESSORS. Patent dated Feb. 8, 1977. Disclaimer and Dedication filed, July 17, 1980, by the assignee, *Compagnie Industrialle des Telecommunications Cit-Alcatel.*

Hereby disclaims and dedicates said patent to the Public.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be

made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6–088,503. Broad Spectrum Vibration Damper Assembly Fixed Stator Vanes of Axial Flow Compressor. Filed Oct. 26, 1979.

Patent application 6–105,362. Surface Acoustic Wave Substrate Having Orthogonal Temperature Compensated Propagation Directions and Device Applications. Filed Dec. 19, 1979.

Patent application 6–115,514. Instantaneous Opening Positive Lock Mechanism. Filed Jan. 25, 1980.

Patent application 6–115,846. Long Time Constant Clutter Tracker for Radar System. Filed Jan. 28, 1980.

Patent application 6–115,847. Radial and Axial Flow Variable Exhaust Nozzle for a Gas Turbine Engine. Filed Jan. 28, 1980.

Patent application 6–118,007. Windscreen Angular Deviation Beam Position Locator. Filed Feb. 4, 1980.

Patent application 6–119,345. Signal Injection Circuit for Radar Gain and Noise Tests. Filed Feb. 7, 1980.

Patent application 6–120,809. High Power Microwave Generator Apparatus. Filed Feb. 12, 1980.

Patent application 6–123,334. Digital Integrating/Auto-Correlator Apparatus. Filed Feb. 21, 1980.

Patent application 6–123,335. High Speed Frequency Acquisition Apparatus for Microwave Synthesizers. Filed Feb. 21, 1980.

Patent application 6–123,612. Coupler for Feeding Extensible Transmission Line. Filed Feb. 22, 1980.

Patent 4,187,675. Compact Air-to-Air Heat Exchanger for Jet Engine Application. Filed Oct. 14, 1977. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,191,561. Method for the Production of Trialuminum Nickelide Fibers. Filed Dec. 12, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,193,032. High Speed Transmitter Pulser. Filed May 8, 1969. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,047. Frequency Selective Ferrimagnetic Power Limiter. Filed May 2, 1978. Patented May 11, 1980. Not available NTIS.

Patent 4,193,066. Automatic Bias Adjustment Circuit for a Successive Ranged Analog/Digital Converter. Filed Apr. 20, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,194,186. Digital Hysteresis Circuit. Filed Apr. 20, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,924. Process for Reclaiming Aircraft Fuel Tank Purging Fluids. Filed Dec. 13, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,194,983. Perfluorinated Polyalkylether Based Lubricant Composition. Filed Feb. 6, 1979. Patented Mar. 25, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 6–039,990. Camera Jig for Underwater Stereoscopic Photography. Filed May 16, 1979.

Patent application 6–045,375. Cavity Dumper. Filed May 31, 1979.

Patent application 6–109,011. Insulated Gate Field-Effect Transistors. Filed Dec. 31, 1979.

Patent application 6–109,692. Solvent Having High Flash Point. Filed Jan. 4, 1980.

Patent application 6–110,428. Frequency Adjustment of Surface Acoustic Wave Devices Through Crystal Rotation. Filed Jan. 7, 1980.

Patent application 6–113,865. Synthesis of Hexanitrobenzene. Filed Jan. 18, 1980.

Patent application 6–114,783. Wire Rope Lubricator Cleaner. Filed Jan. 24, 1980.

Patent application 6–115,631. Overlay Data Entry Device for Automated Data Systems. Filed Jan. 28, 1980.

Patent application 6–121,937. A Method for Determining In Situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique. Filed Feb. 15, 1980.

Patent application 6–122,648. High Sensitivity, Low Noise, Remote Optical Fiber. Filed Feb. 19, 1980.

Patent application 6–122,944. Ablative-Resistant Dielectric Ceramic Articles. Filed Feb. 20, 1980.

Patent application 6–122,945. A Method of Forming Thin Niobium Carbonitride Superconducting Films of Exceptional Purity. Filed Feb. 20, 1980.

Patent application 6–124,204. Regenerative CO_2 Absorbent. Filed Feb. 2, 1980.

Patent application 6–125,299. A Scattered-Light Imaging System. Filed Feb. 27, 1980.

Patent application 6–125,426. Ion-Implanted Evaporated Germanium Layers as n^+ Contacts to GaAs. Filed Feb. 28, 1980.

Patent application 6–125,427. An Improved Laser Technique for Accurately Determining the Compensation Density in n– Type Narrow Gap Semiconductor. Filed Feb. 28, 1980.

Patent 4,156,863. Conical Beam Transducer Array. Filed Apr. 28, 1978. Patented May 29, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–111,438. Automated Syringe Sampler. Filed Jan. 11, 1980.

Patent application 6–119,334. Method of Forming Dynamic Membrane on Stainless Steel Support. Filed Feb. 7, 1980.

Patent application 6–119,335. High Temperature Penetrator Assembly With Bayonet Plug and Ramp-Activated Lock. Filed Feb. 7, 1980.

Patent application 6–119,336. A Linear Magnetic Motor/Generator. Filed Feb. 7, 1980.

Patent application 6–122,965. Thermocouple, Multiple Junction Reference Oven. Filed Feb. 22, 1980.

Patent application 6–122,966. Coupled Cavity Traveling Wave Tube With Velocity Tapering. Filed Feb. 20, 1980.

Patent application 6–058,658. Flexible Formulated Plastic Separators for Alkaline Batteries. Filed July 19, 1979.

Patent application 6–079,914. Flexible Formulated Plastic Separators for Alkaline Batteries. Filed Sept. 28, 1979.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5 :00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 26, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-16-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-6-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-4-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-5-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-25-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	8-17-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-25-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	6-2-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	2-7-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,095,572 to 3,099,836, inclusive
Plant Patents ..... Numbers 2,269 to 2,270, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,396

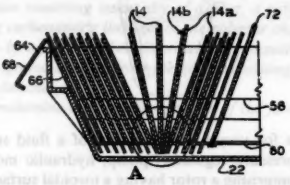
FILING SYSTEM AND ELEMENTS THEREFOR

Arthur T. Spees, 14802 Ridgeboro Pl., Tustin, Calif. 92680

Original No. 3,913,250, dated Oct. 21, 1975, Ser. No. 296,020, Oct. 10, 1972. Continuation-in-part of Ser. No. 883,113, Dec. 8, 1969, Pat. No. 3,785,520, which is a continuation-in-part of Ser. No. 612,202, Jan. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 328,798, Dec. 9, 1963, Pat. No. 3,301,263. Application for reissue Oct. 20, 1977, Ser. No. 843,757

Int. Cl.[2] B42F *17/00*

U.S. Cl. 40—380 **19 Claims**



20. A file system for supporting removable data elements comprising the combination of:

(a) a file receptacle having spaced apart longitudinal sides and having a hold-down portion;

(b) a plurality of file backing cards supported in said receptacle, one behind the other, and each card comprising:

(1) a sheet having top, bottom, and side edges and front and rear faces;

(2) means on one face of said sheet and positioned along a fulcrum line at a location closer to said bottom edge than said top edge and spaced above said bottom edge for separating said one face of said sheet from an adjacent file card, thereby causing fanning apart of said top edges of said sheet and said adjacent file card upon movement of said bottom edges thereof toward one another, the fanning of said cards tending to lift vertically at least one of said cards; and

(3) hold-down means formed on said sheet whereby said sheet engages said receptacle hold-down portion thereby constraining the file cards against upward vertical movement during fanning; and

(c) means on said receptacle for automatically supporting readily removable data elements positioned between adjacent backing cards to prevent such data elements from movement into a position between said backing cards and said separating means.—

Re. 30,397

THREE-DIMENSIONAL ULTRASONIC IMAGING OF ANIMAL SOFT TISSUE

Donald L. King, 19 Searles Rd., Darien, Conn. 06820

Original No. 4,100,916, dated Jul. 18, 1978, Ser. No. 680,885, Apr. 27, 1976. Application for reissue Apr. 2, 1979, Ser. No. 26,088

Int. Cl.[3] A61B *10/00*

U.S. Cl. 128—660 **30 Claims**

1. An apparatus for collecting three-dimensional data on the size, shape, location and nature of animal soft tissue organ structures within the animal and reconstructing the data outside the animal to provide a representation of the size, shape, location and nature of the structure in three dimensions which comprises:

(a) a first means having:

(i) a source transmitting acoustical waves into the tissue; and

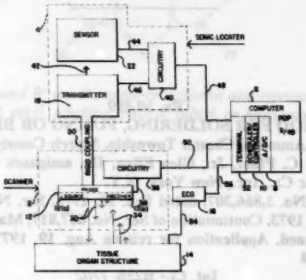
(ii) a receiver for receiving waves from the tissue and detecting measurable physical characteristics of the waves

and the first means producing electronic output signals corresponding to the characteristics of the waves;

(b) a second means having:

(i) a transmitter means which remains in a known spatial relationship with respect to the source and receiver of the first means, and emits into space a plurality of energy waves from a plurality of discrete points; and

(ii) a sensing means which is spaced from the transmitter means and senses each energy wave from each discrete



point of the transmitter means in three dimensions known as X, Y and Z

and the second means producing electronic output signals corresponding to each wave from the plurality of discrete points; and

(c) a computer means electrically coupled to the first and second means and receiving the output signals from the first and second means and processing and assembling the data transmitted by the signals and displaying the data in a form for determining one or more of the size, shape, location and nature of the tissue in three dimensions.

Re. 30,398

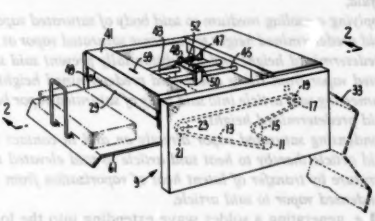
BURSTER MECHANISM

Marlin A. Schueler, Oakland, Calif., assignor to American/-Durein Company, Oakland, Calif.

Original No. 3,991,924, dated Nov. 16, 1976, Ser. No. 596,861, Jul. 30, 1975. Application for reissue Dec. 14, 1978, Ser. No. 969,443

Int. Cl.[2] B26F *3/02*

U.S. Cl. 225—100 **5 Claims**



1. A burster mechanism comprising in combination:

a. a pair of feed rollers located adjacent to the entrance end of a burster machine,
b. a pair of snap rollers located adjacent to the discharge end of said burster machine,
c. said feed rollers and said snap rollers being mounted for rotation on fixed, spaced centers,
d. driving means for said rollers whereby said snap rollers are driven at a slightly higher rate of speed than said feed rollers,
e. a burster bar extending parallel to and between said feed rollers and said snap rollers, and
f. means whereby the *horizontal* position of said burster bar can be *slidably* adjusted to a selected position between said feed and snap rollers.

Re. 30,399

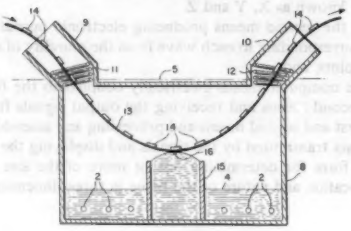
METHOD FOR SOLDERING, FUSING OR BRAZING

Hans H. Ammann, Chester Township, Morris County, N.J., and Robert C. Pfahl, Jr., Glen Ellyn, Ill., assignors to Western Electric Co., Inc., New York, N.Y.

Original No. 3,866,307, dated Feb. 18, 1975, Ser. No. 395,310, Sep. 7, 1973. Continuation of Ser. No. 667,817, Mar. 16, 1976, abandoned. Application for reissue Aug. 19, 1977, Ser. No. 826,104

Int. Cl.[2] **B23K** *1/02*

U.S. Cl. 228—180 R **2 Claims**



16. [Wave soldering an article according to the method of claim 8, further comprising:] *A method of wave soldering an article, comprising:*

a. establishing, substantially at atmospheric pressure, a body of saturated vapor at an elevated temperature extending to a predetermined height over a heat transfer liquid having a boiling point equal to said elevated temperature and at least equal to the melting point of solder but below the melting point of the article, by continuously boiling said heat transfer liquid,

b. applying a cooling medium to said body of saturated vapor at said predetermined height to condense saturated vapor at said predetermined height and to substantially prevent said saturated vapor from rising above said predetermined height,

c. immersing said article into said body of saturated vapor below said predetermined height,

d. condensing saturated vapor directly on and in contact with said article thereby to heat said article to said elevated temperature by transfer of latent heat of vaporization from said condensed vapor to said article,

[g.] *e.* generating a solder wave extending into the lower portion of said body of saturated vapor,

[h.] *f.* passing said article through said solder wave[.],

g. removing said article from said body of saturated vapor.

Re. 30,400

GLOBOID-WORM COMPRESSORS

Bernard Zimmern, 27 Rue Delabordere, 92200 Neuilly sur Seine, France

Original No. 3,551,082, dated Dec. 29, 1970, Ser. No. 794,006, Jan. 27, 1969. Application for reissue Feb. 6, 1979, Ser. No. 9,920

Claims priority, application France, Feb. 8, 1968, 68.139172

Int. Cl.[2] **F01C** *1/08, 11/00;* **F03C** *3/00;* **F04C** *17/04*

U.S. Cl. 418—188 **17 Claims**

1. A device for varying the pressure of a fluid such as a compressor, pressure regulator, pump, hydraulic motor and the like and comprising a rotor having a toroidal surface *generated by a circular arc lying in a plane disposed at an angle to the meridianal plane of said surface, said toroidal surface being* provided with a plurality of projecting threads whose crests are adapted to cooperate with a casing having symmetry of revolution with respect to the axis of said rotor and to come into mesh with the teeth of at least one pinion, characterized in that the teeth of said pinion are cut in a surface having symmetry of revolution with respect to the axis of rotation of said pinion and are inclined to said axis at an angle which is smaller than 90 degrees, that milled slots are formed in said casing so as to permit said teeth to pass through this latter and to engage with said rotor and that ports for the admission and discharge of fluid are provided on each side of said rotor, the ports for the passage of fluid on the high-pressure side being located in the immediate vicinity of the aforesaid pinion.

Re. 30,401

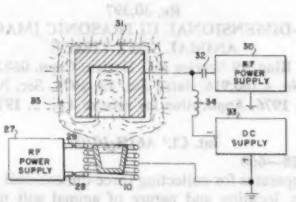
GASLESS ION PLATING

Gerald W. White, Dallas, Tex., assignor to Illinois Tool Works Inc., Chicago, Ill.

Original No. 4,039,416, dated Aug. 2, 1977, Ser. No. 569,679, Apr. 21, 1975. Application for reissue Jul. 7, 1978, Ser. No. 922,719

Int. Cl.[3] **C23C** *15/00, 13/12*

U.S. Cl. 204—192 N **19 Claims**



1. A process for ion plating a substrate supported within a chamber with a plating material and in the absence of any inert gas inputted to said chamber, comprising the steps of: evacuating said chamber, vaporizing plating material in the evacuated chamber, developing a direct current negative bias on said substrate, and applying a radio frequency field from a [first]

radio frequency source to the vaporized plating material within said chamber.

Re. 30,402

SELF-EXTINGUISHING POLYAMIDE COMPOSITIONS

Dietrich Michael, Kresfeld-Bockum, and Wilfried Kosiol, Moers, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Original No. 3,660,344, dated May 2, 1972, Ser. No. 129,206, Mar. 29, 1971. Continuation of Ser. No. 804,262, Mar. 4, 1969, abandoned. Application for reissue Jul. 6, 1977, Ser. No. 813,415

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1968, 1694254

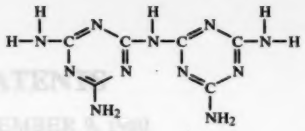
Int. Cl.[2] C08G *51/10, 51/58*

U.S. Cl. 260—37 N **11 Claims**

6. A self-extinguishing fiber-reinforced polyamide moulding composition consisting essentially of a fiber, a polyamide having recurring carbonamide linkages in the polymer chain, and 5.0% to 12.5% by weight based on the moulding composition of a melamine compound selected from the group consisting of

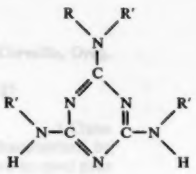
(a) melamine;

(b) a melamine condensation product of the formula



; and

(c) a melamine derivative containing at least one N-substituent and having the formula



in which R and R' are the same or different and represent hydrogen, methyl, ethyl, ethylene, phenyl, toluyl, or halogenophenyl.

PLANT PATENTS

GRANTED SEPTEMBER 9, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,591

PEAR TREE

Melvin N. Westwood, 2130 NW. Elmwood Pl., Corvallis, Oreg. 97330

Filed Aug. 4, 1978, Ser. No. 931,127

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree characterized by its bright red leaves in autumn and its resistance to most pest and diseases.

PLANT PATENTS

GRANTED SEPTEMBER 9, 1980

Abstracts for plant patents are usually in color and therefore it is not possible to reproduce the drawings

4,991
PEAR TREE
Melvin N. Westwood, 1230 NW. Elmwood Pl., Corvallis, Oreg. 97330
Filed Aug. 4, 1978, Ser. No. 931,127
Int. Cl.? A01H 5/00
U.S. Cl. PP.—56 1 Claim
A new and distinct variety of pear tree characterized by its bright red leaves in autumn and its resistance to most pear pests and diseases.

PATENTS

GRANTED SEP. 9, 1980

ERRATA

For CLASS	See PATENT NO.
209–044.1	4,221,035
212–267	4,221,089
368–035	4,221,111
368–084	4,221,112
410–026	4,221,422
209–213	4,221,664
209–247	4,221,665
556–422	4,221,736
568–314	4,221,741
568–393	4,221,742
568–454	4,221,743
568–454	4,221,744
568–931	4,221,745
568–931	4,221,746
370–007	4,221,934
228–034	4,222,026
356–073	4,222,064

PATENTS

GRANTED SEP. 9, 1980

ERRATA

| Cl.
Class | No.
PATENT NO. |
|---|---|
| 209-044.1 | 4,221,035 |
| 212-267 | 4,221,089 |
| 168-035 | 4,221,111 |
| 362-084 | 4,221,112 |
| 410-028 | 4,221,422 |
| 209-213 | 4,221,564 |
| 209-247 | 4,221,685 |
| 558-422 | 4,221,758 |
| 568-314 | 4,221,741 |
| 568-393 | 4,221,742 |
| 568-454 | 4,221,743 |
| 568-454 | 4,221,744 |
| 568-921 | 4,221,745 |
| 568-971 | 4,221,746 |
| 170-007 | 4,221,924 |
| 228-013 | 4,222,004 |
| 350-023 | 4,222,044 |

PATENTS

GRANTED SEPTEMBER 9, 1980

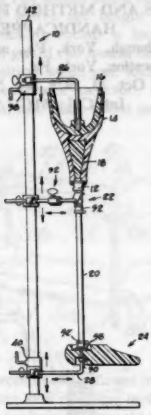
GENERAL AND MECHANICAL

4,221,007

METHOD FOR FITTING A STABILIZED ARTIFICIAL LIMB

Michael T. Wilson, 1259 Monument Blvd., Concord, Calif. 94520

Division of Ser. No. 805,058, Jun. 9, 1977, Pat. No. 4,141,157.
This application Nov. 3, 1978, Ser. No. 956,887
Int. Cl.³ A61F *1/08*
U.S. Cl. 3—21 **16 Claims**



1. A method for fitting a stabilized prosthetic lower extremity including a torque absorber, an interconnecting pylon, and a base adapted to receive a prosthetic foot to an amputee comprising the steps of:

fitting dynamically an adjustable prosthetic lower extremity to the amputee;

removing the adjustable prosthetic lower extremity from the amputee;

positioning the adjustable prosthetic lower extremity relative a datum;

determining the orientation of the adjustable prosthetic lower extremity relative the datum;

removing the adjustable prosthetic lower extremity from the datum;

positioning the base, the torque absorber, and the interconnecting pylon at the determined orientation of the adjustable prosthetic lower extremity relative the datum so that the elements to be stabilized are oriented in the same relation as the adjustable prosthetic lower extremity;

fixing the pylon, the torque absorber, and the base in a permanent relationship.

4,221,008

SWIMMING POOL CHAIR LIFT

J. E. Nolan, P.O. Box 43243, Louisville, Ky. 40243

Filed Apr. 20, 1979, Ser. No. 31,858
Int. Cl.³ E04H *3/16*; A47K *3/12*
U.S. Cl. 4—496 **3 Claims**

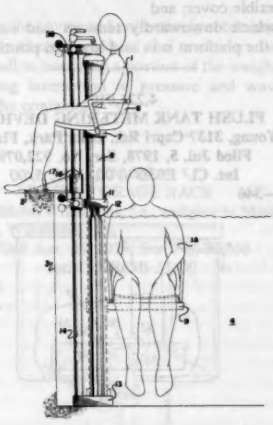
1. A chair lift apparatus for transporting an individual in a generally vertical path into and out of a water pool through an arc extending between a first radial position overlying the edge of the pool and a second radial position overlying the water, the apparatus comprising

(a) a stationary support post vertically oriented in the pool water;

(b) cam guide means formed on the periphery of the support post and extending vertically along a substantial length of the support post, said cam guide having a helical twist near the upper end thereof, the degree of twist forming an arc leading between said first and second radial positions;

(c) fluid pressure responsive hydraulic cylinder means supported by said post with the wall of said cylinder surrounding said post and being movable reciprocally between an upper position with at least a first portion of the cylinder extending above the level of the pool edge and a lower position with at least a second portion of the cylinder extending beneath the surface of the water, said first and second portions having an overlapping segment;

(d) cam follower means attached to the lower end of the cylinder means between the cylinder wall and the post and cooperating with the cam guide means to rotate the cylinder through said arc as the cylinder moves near the upper end of its vertical travel;



(e) a carrier mounted on the overlapping segment of the cylinder means and adapted to receive and hold the individual during the transporting operation;

(f) and valve controlled fluid supply means for selectively supplying and emitting pressurized fluid to and from said cylinder to raise and lower the cylinder and carrier whereby the individual is transported between said first radial position with the individual oriented over the edge of the pool and said second radial position with the individual in the water.

4,221,009

BATHING OR SHOWER APPARATUS

Howard S. Wright, 436 Devon St. West, New Plymouth, New Zealand

Filed Nov. 8, 1978, Ser. No. 958,662
Claims priority, application New Zealand, Nov. 9, 1977, 185653
Int. Cl.³ A47K *3/06*
U.S. Cl. 4—566 **13 Claims**

1. A bath or shower apparatus comprising:

a platform;

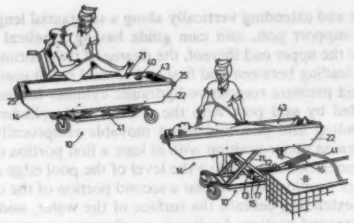
a surround which extends about said platform;

a flexible waterproof flexible cover attached at the periphery thereof to said surround, a central area of said cover resting on and being attached to said platform;

means to move said platform between a raised position where the platform is substantially in the same plane as the

surround and surplus material from said flexible cover is located between the surround and platform and a lowered position where the platform is below the level of the surround and there is maximum downward extension of the flexible cover; and

means which downwardly tensions said surplus material when the platform is in said lowered position.



4,221,010

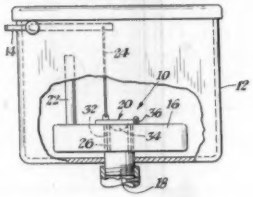
FLUSH TANK METERING DEVICE

Daniel J. Young, 3137 Capri Rd., Lake Park, Fla. 33410

Filed Jul. 5, 1978, Ser. No. 922,079

Int. Cl.[2] E03D *1/00, 1/22, 5/00*

U.S. Cl. 4—346 **1 Claim**



1. A liquid metering device for use in a conventional flush toilet having a manual flush lever, for providing the proper amount of sealing water to the flush bowl from a flush tank after a flush, said liquid metering device comprising:

a metering tank, sized to fit within a conventional toilet flush tank, for holding liquid discharged from said flush tank having contiguous side portion, upper portion and lower portion,

said bottom portion having at least one aperture therethrough,

said top portion having first and second apertures therethrough,

said first top portion aperture conincident above said bottom portion aperture and having a generally larger diameter than said bottom portion aperture,

a conduit means of generally uniform diameter having at least one aperture through the side wall disposed between said coincident apertures in said metering tank whereby said conduit means is generally in intimate contact with said bottom portion aperture so as to form a seal between said conduit means and said bottom portion aperture,

a valve means being sufficiently large and resilient to entirely cover said first top portion aperture to prevent draining of liquid from said flush tank when said valve means is closed,

said conduit means is generally flush with the top portion of said metering tank thereby being spaced from said first top portion aperture sufficient to allow said metering tank to fill with liquid from said flush tank when said valve means is open, and

an air conduit means gaseously connected to said second top portion aperture at one end and being sufficiently long to extend the other end above the normal liquid level in said flush tank,

said valve means movably connected to the top portion of said metering tank for use in allowing liquid in said flush tank to drain through said first top portion aperture when said valve means is open,

an actuating link attached between said valve means and said manual flush lever, and

a connecting conduit means attached to said bottom portion aperture whereby said metering tank will be secured to said flush toilet.

4,221,011

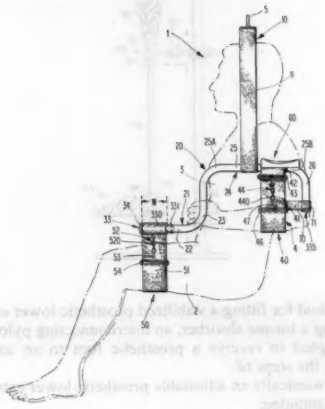
APPARATUS AND METHOD FOR LIFTING THE HANDICAPPED

Henry K. Flinchbaugh, York, Pa., assignor to Flinchbaugh-/Murray Corporation, York, Pa.

Filed Oct. 23, 1978, Ser. No. 953,564

Int. Cl.[2] A61G *1/02*

U.S. Cl. 5—89 **8 Claims**



1. A sling for lifting and supporting a handicapped person comprising:

a pair of members;

first means forming an overhead sling and slidably engaging said members for supporting said members and maintaining head clearance for said person;

second means pivotally engaging said members for retaining said members in spaced relation while permitting same to pivot about said second means;

a pair of leg slings, each adjustably secured to said second means for engagement with and support of each of the upper legs of said person; and

a pair of arm slings, each adjustably secured to each of said members forming means for engagement with and support of each of the forearms of said person, whereby said person is supported by said arm and leg slings.

4,221,012

BUNK BED SIDE RAIL HINGE LOCK

George M. Harris, Chicago, Ill., assignor to Harris-Hub Co., Inc., Harvey, Ill.

Filed Nov. 6, 1978, Ser. No. 957,694

Int. Cl.[2] A47C *21/00*

U.S. Cl. 5—430 **10 Claims**

1. A rectangular bed frame structure comprising:

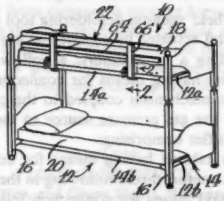
vertical posts at the corners of the frame;

interconnecting means extending between said vertical posts for supporting mattress means on said frame;

guard rail means associated with said interconnecting means

extending vertically above the height of said mattress means; and

means for pivotally connecting said guard rail means to at least one of said interconnecting means, said connecting means comprising a plate having an inside major face and an outside major face, means securing the outside major face of said plate in surface to surface engagement with said guard rail means, hinge means associated with said plate comprising a pair of elements having a common pivot axis parallel to the axis of said one interconnecting means, one of said elements being secured to said plate and the other of said elements being secured to said one interconnecting means, and locking means associated with said plate for releasably locking said plate to said bed frame structure; said guard rail means being in a raised position extending vertically above the height of said mattress means when said locking means is locked to said bed frame structure, said guard rail means being movable to a lower clearance position when said locking means is released from said bed frame structure by pivoting said guard rail means and said plate about said pivot axis;



wherein said one interconnecting means includes a horizontal leg for supporting said mattress means and a vertical leg, said locking means being eagageable with said vertical leg when locked to said bed frame structure; and

wherein said hinge means comprises first hinge means and said locking means includes second hinge means comprising a pair of interleaved members having a common pivot axis which is generally horizontal and perpendicular to the axis of said one interconnecting means, one of said members defining an opening and the other of said members defining a pin received in said opening, a first of said members being secured to said plate, the second of said members being generally U-shaped and having grippable handle means at one end and a locking element at the other end which has an axis in a plane parallel to the vertical leg of said one interconnecting means, said handle being movable to correspondingly move said locking element between a locking position in which said locking element engages said vertical leg of said one interconnecting means to lock said guard rail means in said raised position, and a disengaged position in which said locking element is released from said vertical leg for pivoting said guard rail means to said clearance position.

4,221,013

FLUID FLOTATION SLEEP SYSTEM

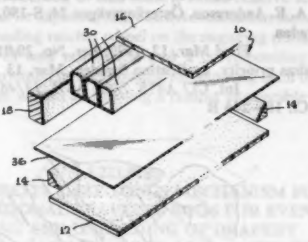
Angel M. Echevarria, 5416 La Crescenta Ave., La Crescenta, Calif. 91214

Filed Mar. 27, 1978, Ser. No. 890,272
Int. Cl.[2] A47C 27/08
U.S. Cl. 5—451 **15 Claims**

1. A fluid flotation sleeping surface construction comprising:

a fitted pair of foam panel members, a first lower one of the panel members having an inclined peripheral resilient border attached thereto and having a planar surface member on the under side thereof, and the second upper one of the panel members having a resilient border of substantial height with a planar surface member attached on the upper side thereof, one of the borders registering about the other whereby an interior cavity is defined between the inner sides of the surface members and the inner portions of the resilient borders; and

a plurality of separate, pliant but substantially nonstretchable water containers disposed in adjacent and abutting rela-



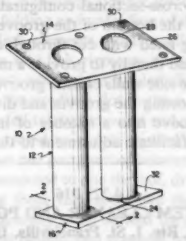
tion within the cavity and collectively substantially filling the volume thereof, each of the containers being sufficiently small to bear only a portion of the weight of a user and limiting interaction of pressure and wave motion between the containers.

4,221,014

POST STORAGE RACK

Samuel L. Davidson, Winnsboro, La., assignor to Mastercrafters Corporation, Winnsboro, La.

Filed Apr. 25, 1979, Ser. No. 33,338
Int. Cl.[3] B63B 35/00
U.S. Cl. 9—1.1 **5 Claims**



1. In combination with a boat of the type having generally vertically disposed interior wall means with a space therebehind, and also having at least one seat adapted to be supported on pedestal means, wherein said pedestal means includes at least one elongated removable post, the improvement which comprises:

storage rack means mounted upon said boat;

said storage rack means including a tubular member adapted to receive and store said elongated post when it is removed from the pedestal means;

said storage means further including abutment means which engages said elongated post when disposed in said tubular member;

said abutment means causing only an end portion of said post to project partially beyond said storage rack means to permit said projecting end portion which projects beyond said storage rack means to be grasped for removal of said post from storage rack means;

said storage rack means further including plate means secured to and extending laterally of said tubular member, said plate means being mounted on said generally vertically disposed interior wall means;

said tubular member extending generally rearwardly and

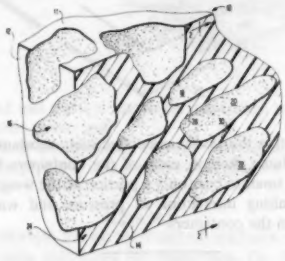
downwardly from said wall means to said space therebehind.

4,221,015

TOOTH-CLEANING DEVICE

Bror A. E. Andersson, Österängsvägen 24, S-180, 10 Enebyberg, Sweden

Filed Mar. 13, 1979, Ser. No. 20,018
Claims priority, application Sweden, Mar. 13, 1978, 7802828
Int. Cl.³ A47K 7/02; A47L 13/46
U.S. Cl. 15—244 R 2 Claims



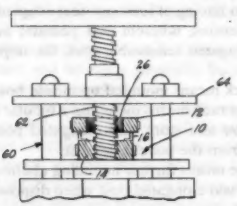
1. A tooth-cleaning device with a biting bit having two opposing side walls to receive therebetween a plurality of teeth while biting the teeth together over the biting bit, the device comprising a head and a transverse handle projecting from one side of the head, the head and handle being integral with each other and both being of resilient cellular material, tooth-receiving grooves extending lengthwise of the head on opposite sides of the head, the cross-sectional configuration of the grooves widening toward the bottom of the grooves, the side walls of the grooves being lined with cut-through cells of the cellular material of the head thereby to provide a multiplicity of cleaning surfaces on the side walls of each groove, and a plurality of transverse slits crossing the grooves and dividing the opposite walls of each groove into a number of individually flexible portions so as to facilitate adjustment to the individual teeth.

4,221,016

VALVE STEM CLEANER AND POSITIONER

Harold R. Adams, Rte. 1, St. Francisville, Ill. 62460

Filed Jun. 7, 1979, Ser. No. 46,468
Int. Cl.³ A46B 15/00
U.S. Cl. 15—256.5 8 Claims



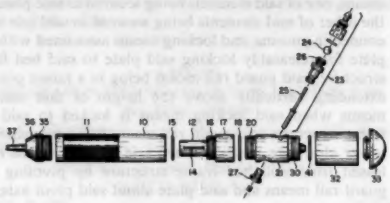
1. A device for cleaning threaded valve stems on valves having a valve housing and means for positioning the device in selected axial positions on the threaded valve stem, said device comprising a ring-like brush holder having radially inwardly extending bristle elements and said positioning means comprising a member connected to said holder having internal threads engageable with the threads of the valve stem, said positioning means being adapted to be moved in threaded engagement with the valve stem and carry the brush holder with it to clean the threads of said valve stem.

4,221,017

VACUUM DESOLDERING TOOL AND TOOL CLEANER SYSTEM

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91404

Filed Nov. 9, 1978, Ser. No. 959,013
Int. Cl.³ A47L 5/18; B23K 3/00
U.S. Cl. 15—344 6 Claims



1. In a hand held vacuum desoldering tool of the type to be connected to and actuated by an external gas pressure source, the tool including a tip assembly, a hollow internallyunobstructed cylinder having means for connection to the tip assembly, a valve mechanism coupled to the cylinder for connecting at will the gas pressure source to the tool, a venturi exhaust and muffler comprising:

(a) a venturi exhaust having means for connection to the cylinder, a venturi throat following in the direction of the gas flow, said means for connection followed by a relatively narrow passage in the direction of the gas flow, said narrow passage being surrounded by a wall forming with the outer wall of said exhaust an annular exhaust space and plenum, said venturi throat having a ratio of its largest diameter to the smallest diameter of at least 4 to 1; and

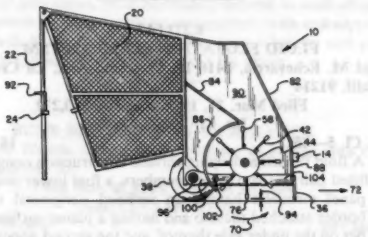
(b) a rearwardly extending outer cap providing a muffler and forming a wall having a smooth outwardlycurved external surface, said outer cap being substantially unobstructed and having substantially gas-tight means for a connection to said exhaust, said outer cap being provided with a plurality of radially outwardly extending openings through the wall thereof to permit the compressed gas and the air sucked through said tip assembly to vent directly into the atmoshpere.

4,221,018

LAWN SWEEPER

Ferenc Hajdu, P.O. Box 400, Lacomb, La.

Filed Oct. 10, 1978, Ser. No. 949,996
Int. Cl.² E01H 1/04
U.S. Cl. 15—347 13 Claims



1. A lawn sweeper for clearing a lawn of accumulated debris such as leaves, pine straw and the like, comprising:

(a) a housing comprising, in part, a frame and having a

bottom opening and a discharge opening having attached thereto a collector bin;

(b) a rotatable base positioned within the housing and supported on an axis of rotation about an at least generally horizontal axis and over the bottom opening and substantially above ground level;

(c) vacuum forming means, associated with the rotatable base for forming a vacuum within the housing and over the bottom opening above the lawn area to be cleared, the vacuum forming means comprising, in part, a plurality of spaced wire cable sections, having inner ends fixedly attached to the base and having outer ends radially extending from said base and further comprising, in part, lateral extention blade means positioned on said wire cable sections and extending out from at least one side of said cable section, said cable sections with said lateral extention blade means extending radially out from said base a distance less than the separation difference between the base and the ground level, thereby being out of contact with the ground as said base rotates;

(d) drive means, associated with the rotatable base and the housing, for rotating the base with its vacuum forming means as the lawn sweeper is moving forward to vacuum the debris up through the bottom opening and backwards through the discharge opening into the collector bin; and

(e) a plurality of ground support means mounted on the housing for carrying the housing and the lawn sweeper along the lawn.

4,221,019

FLOORCARE DEVICE

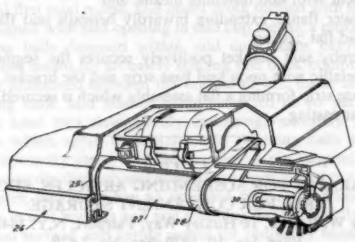
Jurgen Jäger, Witten, and Georg Haase, Radevormwald, both of Fed. Rep. of Germany, assignors to Vorwerk & Co Interhaolding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Apr. 20, 1979, Ser. No. 31,868

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817197

Int. Cl.³ A47L *9/06*

U.S. Cl. 15—368 **13 Claims**



1. A floorcar device operable with the use of suction, comprisng

a housing;

a hollow brush in said housing, said hollow brush bounding an inner passage and rotatable about an axis;

an axle extending through said inner passage of said hollow brush and defining the axis of rotation thereof, said axle having two axial end portions;

two eccentrics, each respective one of which being located adjacent to a respective one of said axial end portions of said axle and having a receiving portion which is coaxial with said axis of rotation and receives a respective one of said axial end portions of said brush, and an engaging portion which has a further axis spaced from said axis of rotation so that said engaging portion is eccentrically offset relative to said receiving portion of the same eccentric; and

a ratchet mechanism turnably supporting said engaging portion of said eccentrics and thereby supporting said axle and said hollow brush in said housing, and arranged to turn said eccentrics about said further axis of said engaging portions so that said receiving portions and thereby said axle and said axis of rotation of said hollow brush are displaced relative to said housing whereby the position of said axis of rotation of said hollow brush relative to said housing can be adjusted, said ratchet mechanism including a corresponding ratchet wheel on the engaging portion of each one of said eccentrics, and a corresponding ring member mounted in said housing surrounding each one of said ratchet wheels and having a ratchet engageable with the latter.

4,221,020

LOW-VISIBILITY LAZY-TONGS MECHANISM FOR CONVENTIONAL TRAVERSE RODS FOR EVEN FOLDING AND UNFOLDING OF DRAPERY

Joseph R. Wertepny, 1614 Parnell St., Marinette, Wis. 54143

Continuation-in-part of Ser. No. 790,849, Apr. 25, 1977, Pat. No. 4,152,809. This application Apr. 23, 1979, Ser. No. 32,262

Int. Cl.² A47H *1/04, 15/00*; E05D *13/02, 15/06*

U.S. Cl. 16—96 D **10 Claims**

1. A low-visibility lazy-tongs device for conventional traverse rods for even folding and unfolding of drapery, comprising: a plurality of link elements, horizontally disposed pivot pins interconnecting said link elements in lazy-tongs manner, spool-shaped elements adapted for guided sliding engagement with the edges of a longitudinal slot in the rear face of a conventionally constructed tubular traverse rod, said spool-shaped elements being connected to evenly spaced pairs of said link elements with at least one pair thereof between adjacent spool-like elements not connected to one thereof, drapery-supporting elements depending from said spool-like elements, said link elements being sufficiently small so that they will be substantially fully concealed behind said traverse rod when the lazy-tongs linkage formed by said link elements is fully extended.

4,221,021

METHOD AND APPARATUS FOR ELECTRICAL STIMULATION OF AN ANIMAL CARCASS

Wilson H. Swilley, San Pablo, Calif., assignor to LeFiell Company, San Francisco, Calif.

Filed May 30, 1979, Ser. No. 43,792

Int. Cl.² A22C *9/00*

U.S. Cl. 17—45 **11 Claims**

1. An apparatus for applying electrical energy to a carcass of an animal, comprising:

(a) a base;

(b) an endless belt supported upon said base and having segments with diverse electrical conductivity properties;

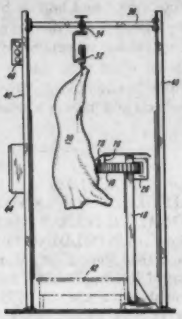
(c) means for continuously moving said endless belt relative to said base through a predetermined working area;

(d) means for movingly supporting an animal carcass and contacting relationship with said endless belt in said predetermined working area;

(e) means for applying electrical energy to selective segments of said endless belt in said predetermined area.

7. A method of electrically stimulating an animal carcass, comprising:

(a) rotating an endless belt having a plurality of segments of electrical conductors separated by electrical insulators;
(b) applying an electrical charge to selected segments of electrical conductors; and



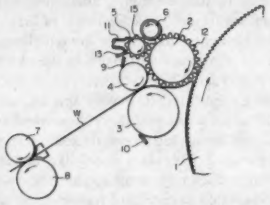
(c) contacting the selected segments with an animal carcass and passing the electrical charge applied to selected segments through the animal carcass.

4,221,022

APPARATUS FOR STRIPPING THE CARDED WEB FROM THE DOFFER CYLINDER OF THE TEXTILE CARDING MACHINE

Shigenobu Iida, Nagoya, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 9, 1979, Ser. No. 28,187
Claims priority, application Japan, Apr. 7, 1978, 53-41483
Int. Cl.[2] D01G *15/46, 15/50, 15/84*
U.S. Cl. 19—106 R **9 Claims**



1. An apparatus for stripping the carded web from the doffer cylinder of the textile carding machine having a roller arrangement which consists of a card clothed doffer cylinder, a stripping roller and a pair of top and bottom rollers with smooth surfaces arranged one after the other in the direction of a moving web, said roller arrangement comprising in combination:

a stripping roller clothed with a scatteredly toothed metallic wire and arranged close to the doffer cylinder;

a bottom, smooth roller of a large diameter disposed below the stripping roller, wherein the distance between said stripping roller and said bottom roller is such that the surface of said moving web comes into slight contact with the bottom roller, the speed of said bottom roller is substantially the same as that of said stripping roller, and said bottom roller rotates in the opposite direction of that of said stripping roller;

a top smooth roller cooperating with said bottom roller which is disposed in such a way that the distance between said top roller and said stripping roller is small, and said web engaged with said metallic wire of said stripping roller can be released from said stripping roller within said distance, and the surface speed of said top roller is substantially the same as that of said stripping roller, and;

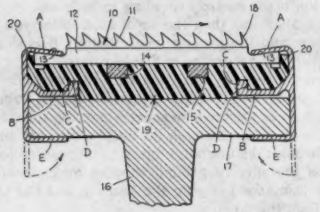
an auxiliary stripping roller clothed with a scatteredly toothed metallic wire and disposed above said top roller and also close to said stripping roller, said auxiliary stripping roller exhibiting a surface speed which is slower than that of said stripping roller and rotating in the same direction as that of said stripping roller.

4,221,023

CARDING FLAT STRUCTURE

William E. Henderson, Simpsonville; Jerry B. Goering, Mauldin, and Gene A. Dempsey, Lyman, all of S.C., assignors to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Sep. 6, 1978, Ser. No. 940,002
Int. Cl.[2] D01G *15/24*
U.S. Cl. 19—113 **2 Claims**



1. A carding flat clothed with transverse segments of metallic wire having teeth therein carried upon a plastic base strip for positioning upon a flange of a flat casting comprising:

a pair of opposed elongated longitudinal brackets marginally carried by said base strip, each of said brackets having;

a substantially horizontal upper leg overlying and retaining aligned end portions of said segments of metallic wire;

an inwardly projecting element having fastening means carried thereby;

said base strip having a lower engaging portion for securement with said fastening means; and

a lower flange extending inwardly beneath said flange of said flat casting;

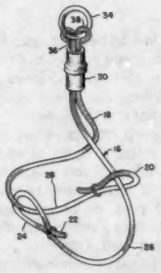
whereby said bracket positively secures the segments of metallic wire upon said base strip and the bracket to said base strip forming a flat assembly which is secured to said flat casting.

4,221,024

APPARATUS FOR SUSPENDING ARTICLES, SUCH AS SKIS, FOR CONVENIENT STORAGE

Harvey W. Becker, 16 Huxley Way, Fairport, N.Y. 14450

Filed Jan. 10, 1979, Ser. No. 2,429
Int. Cl.[3] F16G *11/14*
U.S. Cl. 24—115 H **11 Claims**



1. Apparatus for suspending articles, such as pairs of skis,

which have curved ends, so that they can be stored adjacent to each other, said apparatus comprising a single strand of flexible material, the ends of said strand being formed into permanent first loops, each end passing through the loop at the end opposite thereto with the strand forming a pair of second holding loops for said articles adjustable in size which extend along the length of the strand away from and between the first loops, a portion of the strand which extends away from the second loops being folded over, and a slide through which said folded over portion extends for adjusting the sizes of said second loops so that they fit around the curved ends of said articles and hold said articles when said folded portion is elevated above them.

4,221,025

ANTI-THEFT LOCKING DEVICE

Henry J. Martens, Lynnfield, and Jan Vandebult, Topsfield, both of Mass., assignors to I. D. Engineering, Inc., Ipswich, Mass.

Filed Dec. 20, 1978, Ser. No. 971,165
Int. Cl.[2] A44B *9/00*
U.S. Cl. 24—150 R **9 Claims**

1. A locking device comprising a non-metallic housing substantially closed at one end and formed with a first axial recess and a relatively enlarged second axial recess at the opposite, open end of said housing; cup means the top of which is securely mounted in said enlarged recess in said housing, said cup means being formed with radially inwardly tapered side wall portions which form a cam surface, and an opening in the otherwise closed end thereof; an insert formed of magnetizable material loosely received within said housing and extending into said first axial recess, said insert being formed with an axial bore aligned with said opening in said cup means; a plurality of retaining balls disposed within said cup means below said insert, and means for arcuately spacing said balls, comprising a washer positioned between the bottom of said insert and said retaining balls, said washer being provided on its periphery with a least two downwardly extending, arcuately spaced flanges which serve to separate said retaining balls as they move upwardly along said cam surface; a pin adapted to extend upwardly through said aligned openings in said cup means and insert, said pin when so extended moving said insert upwardly in said housing and said retaining balls upwardly along said cam surface, and spring means for resiliently biasing said insert toward the open end of said housing, thereby causing said retaining balls to tightly frictionally engage said pin and retain the same in said locking device until said insert is again moved upwardly against the bias of said spring, by a detaching tool or the like, thereby permitting said pin to be released.

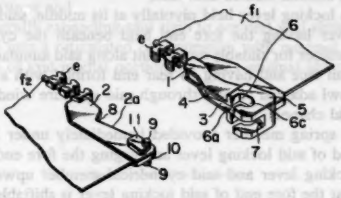
4,221,026

SEPARABLE END STOP OF A SLIDE FASTENER

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Jun. 5, 1979, Ser. No. 45,607
Claims priority, application Japan, Jun. 15, 1978, 53-82601[U]
Int. Cl.[2] A44B *19/00*
U.S. Cl. 24—205.11 R **5 Claims**

1. A separable end stop of a slide fastener composed of a pair of separable slide fastener stringers which comprises a connector piece fastened to the end of the element row of one of the stringers and an insert piece fastened to the end of the element row of the other one of the stringers to be inserted into the connector piece when the connector piece and the insert piece are coupled with each other, the free end of the insert piece remote from the element row being shaped as elongated and flat to form a guide surface extending laterally in the direction perpendicular to the longitudinal direction of the associated element row, the insert piece being provided with a stud pin



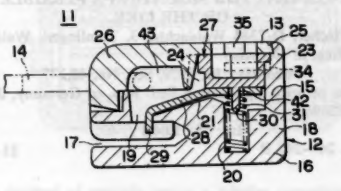
inside the guide surface as implanted thereon, the connector piece being provided with a guide channel for the stud pin and with a projection extending laterally to come into contact with the guide surface of the insert piece when the connector piece and the insert piece are coupled with each other.

4,221,027

LOCKABLE SLIDER FOR SLIDE FASTENERS

Kiyoshi Oda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Jun. 5, 1979, Ser. No. 45,606
Claims priority, application Japan, Jun. 16, 1978, 53-81482[U]
Int. Cl.[2] E05B *67/38*
U.S. Cl. 24—205.14 R **11 Claims**



1. A lockable slider for a slide fastener including a pair of carrier tapes having mounted rows of interlocking fastener elements on and along their respective longitudinal inner edges, said lockable slider being adapted to be locked to said rows of interlocking fastener elements by a separate key, said lockable slider, comprising:

(a) a slider body having a Y-shaped channel so formed as to pass therethrough longitudinally thereof for passage of said interlocking fastener elements therethrough and an aperture window so formed at its upper surface as to communicate with said Y-shaped channel;

(b) a cover mounted on the upper surface of said slider body and including a circular body connected to the fore of said slider body to define a cylindrical bore therewith and an elongated rectangular tail extending radially, rearwardly therefrom and longitudinally of said slider body, medially bent downwardly and eventually connected to the rear end of said slider body so as to define a relative large lateral opening with the rear of said slider body, said cylindrical bore being disposed perpendicularly to the plane of said slider, said circular body having a key hole formed centrally thereof and therethrough so as to be disposed in registry with the axis of said cylindrical bore for insertion of said separate key therethrough;

(c) a pull tab having a pintle formed at its fore end and adapted to be loosely inserted through said lateral opening to permit to be pivotally and freely connected to said rectangular tail;

(d) a cylindrical member rotatably received within said cylindrical bore, said cylindrical member being provided centrally of its upper surface with a key recess adapted to be engaged with the operative tip of said separate key for the rotation of said cylindrical member thereby, said cylindrical member being provided at its lower surface with an annular slanted cam face;

(e) a locking lever held pivotally at its middle, said locking lever having the fore end held beneath the cylindrical member for slidable movement along said annular slanted cam face and having its rear end formed with a locking pawl adapted to pass through said aperture window into said channel; and

(f) a spring member provided immediately under the fore end of said locking lever and urging the fore end of said locking lever and said cylindrical member upwardly so that the fore end of said locking lever is shiftable by the turn of said separate key either through or against the bias of said spring member between elevated position in which the fore end of said locking lever reaches the uppermost point of said slanted annular cam face and depressed position in which the former reaches the lowermost point of the latter, whereby said locking lever pivots in such a manner to, at said elevated position, intrude said locking pawl into said channel into engagement with said interlocking fastener elements leading to locking of said lockable slider thereto and, at said depressed position, lift said locking pawl out of said channel off said interlocking fastener elements leading to unlocking of said lockable slider therefrom.

4,221,028

ARRANGEMENT FOR MOUNTING A FLEXIBLE FILM OR THE LIKE

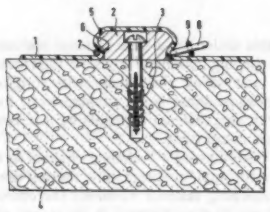
Artur Fischer, D-7244 Waldachtal 3, Tumlingen, Waldachtal, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,277

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2826969

Int. Cl.[2] E04B *1/40*

U.S. Cl. 24—245 R **11 Claims**



1. An arrangement for mounting a flexible film or the like, particularly to seal a substrate, comprising an inner clamping member connected with a substrate and having a relatively large outer surface on which a film is placed and an undercut portion with also a relatively large outer surface; means for connecting said inner clamping member with the substrate and formed by a connecting element which is separate from and has an outer surface which is considerably smaller than that of said inner clamping member; and an outer clamping member formed by a metallic corrosion-resistant spring ring which has a relatively small circular cross-section and relatively large diameter and inner circumferential surface and surrounds the film in the region of said undercut portion of said inner clamping member, so that the film is easily clamped by and firmly held between said clamping members over a large surface of the film without being damaged or loosened.

4,221,029

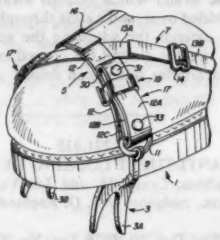
BINDING STRAP FASTENER

Susanne M. Jerome, 1540 E. Griswold Rd., Phoenix, Ariz. 85020

Filed Oct. 11, 1978, Ser. No. 950,474

Int. Cl.[2] A44C *5/18*

U.S. Cl. 24—265 R **10 Claims**



1. A strap fastening system for releasably fastening a strap to a connector, said strap fastening system comprising in combination:

a. means for securing a first point of said strap to an object to be held in place by said strap;

b. lever means attached to a second point of said strap for applying force against said connector to draw said strap toward said connector and to increase the tension in said strap when said lever means is rotated about said connector, said lever means having first and second end points, said lever means being rigid from said first end point to said second end point, said lever means having a first surface extending between said first and second end points, a portion of said connector passing from said first end point across said first surface to said second end point during rotating of said lever means; and

c. lever retaining means connected to said strap for releasably retaining said lever means approximately against a portion of said strap between said first and second points after said rotating, said connector engaging said lever means adjacent said second end point while said lever means is retained by said lever retaining means.

4,221,030

CLAMP RING

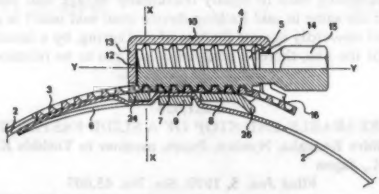
Remy J. Bernede, Vaucresson, France, assignor to Etablissements Caillau, Boulogne-Billancourt, France

Filed Oct. 17, 1978, Ser. No. 952,256

Claims priority, application France, Dec. 2, 1977, 77 36295

Int. Cl.[2] B65D *63/00*

U.S. Cl. 24—274 R **11 Claims**



1. A clamp ring comprising a strip having a first and a second end portions, a series of transversely extending ridges or like profiles provided at said first end portion of said strip, a housing carried towards said second end portion of said strip, and a screw rotatably mounted within said housing and having screw threads engaged with said ridges of said strip to provide for tightening of said ring, said ridges being in the shape of a

rack provided on a central portion of the strip which is outwardly offset with respect to side portions of the strip and which provides a guide groove in the lower face of said strip, and a raised shaped portion provided on the bottom of said housing and slidably engaged in said guide groove of said strip.

4,221,031

DEVICE FOR DEPOSITION OF LOOPS OF YARN ON A CONVEYOR BELT OF A YARN PROCESSING CHAMBER

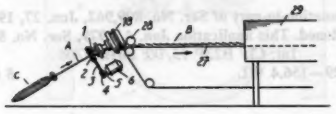
Georges E. Gilbos, Aalst, Belgium, assignor to Textielmachinefabriek, Herdersem, Belgium

Filed Aug. 21, 1978, Ser. No. 935,239

Claims priority, application Belgium, Sep. 1, 1977, 256205; Sep. 30, 1977, 858320

Int. Cl.[2] D02G *1/20*; D02J *1/22*

U.S. Cl. 28—281 **5 Claims**



1. A device, for depositing loops of yarn on an endless belt conveyor which passes through a yarn processing chamber, comprising a support structure, a hollow shaft rotatably mounted in said structure and having a side opening, an arm attached to said shaft and carrying a yarn guiding eyelet, a stationary drum having a conical peripheral surface area of which the center line lies along the extension of said hollow shaft and upon which the yarn is wound after passing through the hollow shaft and the side opening in the shaft and the thread guiding eyelet, an annular pressing off element encircling the drum closely adjacent to said surface area, and means for moving the pressing off element with a wobbling motion in order to press loops of yarn, wound on the peripheral surface of the drum, axially off the drum.

4,221,032

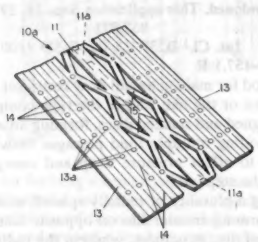
METHOD OF FORMING EXPANDED METAL GRIDS PARTICULARLY LEAD GRIDS FOR STORAGE BATTERY PLATES

Bernard A. Cousino, Fort Myers, Fla.; Walter E. Cousino, Toledo, Ohio, and John T. Redmon, Fort Myers, Fla., assignors to Cousino Impact Corporation, Fort Myers, Fla.

Filed Apr. 4, 1979, Ser. No. 27,100

Int. Cl.[3] B21D *31/04*, *47/02*

U.S. Cl. 29—2 **12 Claims**



1. A method of forming a plurality of interconnected lead battery grids comprising the steps of:

(1) feeding a continuous strip of a lead base material along a linear path aligned with the length axis of the strip;

(2) punching out a continuous series of apertures linearly spaced along said strip and located transversely between a medial portion of said strip and one edge of said strip thereby leaving an unpunched band adjacent said one edge of said strip;

(3) forming a continuous series of longitudinal slits in said unpunched band longitudinally and laterally spaced relative to each other and located between said apertures and said one edge of said strip but not extending into said apertures and

(4) laterally expanding said strip to convert said slitted portion into a reticulated configuration with minimal distortion of said medial portion out of its original plane.

4,221,033

METHOD OF MAKING A TUBULAR CAPACITOR

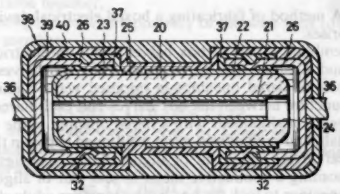
Tomiji Kobayashi, Gunma, Japan, assignor to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1978, Ser. No. 957,071

Claims priority, application Japan, Nov. 19, 1977, 52-139061; Aug. 25, 1978, 53-103600

Int. Cl.[3] H01G *4/28*

U.S. Cl. 29—25.42 **16 Claims**



1. A method of manufacturing a tubular capacitor which comprises the steps of:

(a) providing a tube of dielectric material having at least two electodes formed thereon, the electrodes overlying at least the outer surfaces of the opposite end portions of the dielectric tube;

(b) forming a rosin film over the exposed surfaces of the dielectric tube and the electrodes thereon;

(c) providing a pair of metal caps each having a plurality of inward projections formed at circumferential spacings thereon and a solder layer covering at least each inward projection;

(d) pressing the metal caps onto the opposite ends of the dielectric tube, the inward projections of each metal cap being thus engaged with one of the electrodes on the dielectric tube;

(e) melting the solder layer on each inward projection of each metal cap, thereby reinforcing mechanical and electrical contact between the electrodes and the metal caps through soldered joints thus formed between the electrodes and the inward projections of the metal caps;

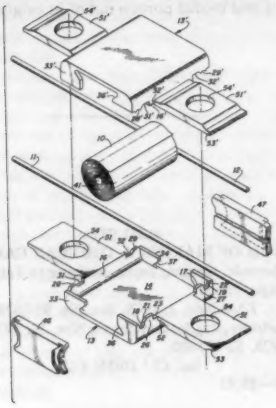
(f) forming substantially flexible, hermetic sealing joints at least between the electrodes and the metal caps by applying an electrically insulating paint while the interior of the dielectric tube and of the metal caps is substantially evacuated; and

(g) forming an external covering of electrically insulating material at least over the sealing joints and a region therebetween.

4,221,034
METHOD OF FABRICATING A PACKAGED ELECTRICAL DEVICE

Donald R. Brown, Downers Grove; Otto T. Masopust, Jr., Cicero, and John R. Meal, Naperville, all of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,045
Int. Cl.[3] H01G 4/32
U.S. Cl. 29—25.42 15 Claims



1. A method of fabricating a boxed electrical device, which comprises:

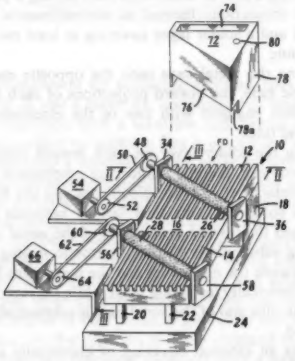
assembling a pair of box halves about an electrical device and a pair of lead wires, each of the box halves having a pair of flared openings in opposed walls running to the juncture between the box halves and each flared opening being in alignment with a flared opening in the other box half, and each of said wires positioned between the electrical device and a pair of aligned flared openings; and

depositing a conductive metal in said pair of aligned flared openings to lock the box halves together while electrically connecting said lead wires to said electrical device.

4,221,035
APPARATUS FOR REMOVAL OF PLASTIC OVERWRAP FROM RECLAIM TOBACCO

Richard E. Thatcher, Chesterfield, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,463
Int. Cl.[2] B07C 9/00
U.S. Cl. 209—44.1 9 Claims

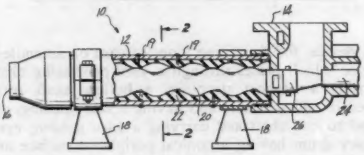


1. Apparatus for use in a tobacco reclaiming operation in the removal of portions of plastic package overwrap of open geometric configuration, said apparatus comprising: elongate vibratory conveyor means for receiving reclaim tobacco laden with such overwrap portions and advancing the same in a feed direction, said conveyor means having a plurality of longitudinally extending grooves spaced mutually transversely of said feed direction; and roller means overlying said conveyor means and supported for rotation about an exis forming an acute angle with the longitudinal axis of said conveyor means, each of said grooves defining a reduced depth portion directly underlying the extent of said roller means overlying such groove.

4,221,036
METHOD OF SECURING A MOINEAU PUMP STATOR

Darl M. McCoy, Horse Shoe, N.C., and Charles W. Hawk, Jr., Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 809,962, Jun. 27, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 856
Int. Cl.[3] B23P 15/00; F01C 5/06
U.S. Cl. 29—156.4 WL 5 Claims



1. A method of securing a resilient, internally helically ribbed, tubular Moineau-type pump stator within a rigid surrounding tubular housing to prevent rotation or axial movement of said stator within said housing when a Moineau-type pump rotor rotates therewithin, which method comprises the steps of linearly providing a tubular housing having a resilient Moineau-type pump stator mounted therein and driving with a gun a plurality of unthreaded pin-type studs through said rigid housing and partially into said resilient stator so as to simultaneously create and fill a hole through said rigid housing.

4,221,037
METHOD FOR MANUFACTURING A FLUID CONTROL DEVICE WITH DISC-TYPE FLOW RESTRICTOR

Fritz O. Seger, Fairview, Pa., assignor to Copes-Vulcan, Inc., Lake City, Pa.

Continuation of Ser. No. 641,544, Dec. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 415,828, Nov. 14, 1973, abandoned. This application Sep. 29, 1977, Ser. No. 837,871
Int. Cl.[2] B23P 15/00; F15D 1/00
U.S. Cl. 29—157.1 R 4 Claims

1. A method for making a fluid flow restrictor for incorporation in a valve or the like, and of the type comprising a series of axially aligned and stacked discs, forming an annular restrictor and providing multiple fluid passages between the inside and outside to effect pressure drop and energy dissipation, comprising the steps of

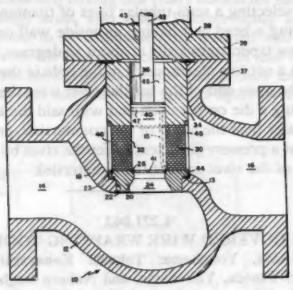
(a) forming a plurality of radially spaced, axially projecting baffle-forming annular ribs on opposite faces of each disc of several disc structures, wherein the radial thickness of each of said ribs is substantially less than the radial width of the recess formed between adjacent ribs, and the ribs and recesses are of substantially equal height,

(b) forming said annular ribs on said several disc structures whereby the annular ribs on alternate ones of said several disc structures are arranged such that said disc structures are stackable one on another with the ribs on opposed faces of adjacent discs in the stack being offset in the

assembled stack with the annular ribs of one disc structure being received in the annular recess of the other,

(c) thereafter forming a plurality of radially aligned slots extending through successive ones of said annular ribs on each face of said disc structures,

(d) arranging said disc structures in a fixed stack whereby the annular ribs of one face of each disc structure are received in the recesses between the offset annular ribs of



the opposed face of an adjacent disc structure and contact said opposed face to define annular flow passages, and

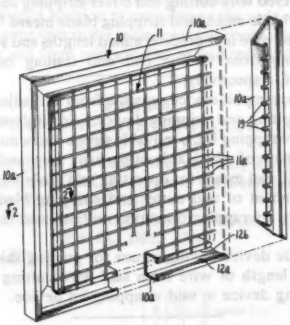
(e) orienting said disc structures in the stack whereby the radially aligned slots of the ribs on one side of a disc structure are offset from the radially aligned slots of the interfitting ribs of the adjacent disc structure to form a plurality of series-parallel flow paths between the inside and outside of the assembled disc stack.

4,221,038

METHOD FOR FORMING A FRAME

Richard M. Singer, Lafayette, Calif., and Charles H. Seidl, Kane, Pa., assignors to Kane Manufacturing Corporation, Kane, Pa.

Filed Mar. 12, 1979, Ser. No. 19,344
Int. Cl.³ B23P *15/12*
U.S. Cl. 29—160 **2 Claims**



1. A method for forming a screen product from an elongate strip of formable material and a strip of square mesh interlacing of wire rods, said strips of formable material having substantially parallel first and second side edges, said method comprising the steps:

cutting the ends of each strip to provide edges defined by a continuous line of straight segments joined end to end at angular offsets of approximately 45 degrees, a first segment beginning at the first side edge and extending at an angular offset of 45 degrees relative to said first side edge, a second segment connected to the end (point A) of said first segment at an angular offset of 45 degrees and being substantially perpendicular to said first side edge, a third segment connected to the end (point B) of said second segment at an angular offset of 45 degrees and being substantially perpendicular to said first segment, a fourth segment connected to the end (point C) of said third segment at an angular offset of 45 degrees and being substantially perpendicular to said first side edge and parallel to said second segment, and a fifth segment connected to the end (point D) of said fourth segment;

forming a plurality of slots in the second side edge of each strip, each slot extending into the region between a pair of imaginary lines parallel with said side edges, said imaginary lines passing through points C and D, respectively, said slots being spaced apart equal distances from each other;

deforming each said strip longitudinally along four lines parallel to said side edges, one line extending through point A, a second line extending through point B, a third line extending through point C and a fourth line extending through point D, each deformation producing a substantially right angle bend in said strip and resulting in a rectangular frame member having a front wall, parallel inner and outer side walls and a pair of flanges facing each other, the inner side wall and connected flange being slotted, the ends of each frame member defining a 45 degree cleavage connectable with the ends of other frame members at substantially right angles;

connecting four thus formed frame members end to end to form a rectangular frame;

then assembling a square mesh interlacing of wire rods to the frame, the ends of said rods being received in the slots of each frame member;

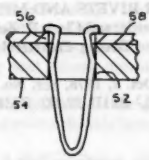
and securing the ends of a plurality of the wire rods to each frame member.

4,221,039

GASKET HOLDER CLIP

Harman S. Smith, 5407 College Ave., St. Louis, Mo. 63136

Continuation of Ser. No. 785,598, Apr. 17, 1977, abandoned.
This application May 8, 1978, Ser. No. 903,954
Int. Cl.² B25B *27/14*
U.S. Cl. 29—271 **1 Claim**



1. The combination of a gasket of varying thickness provided with holes, an underlying member having corresponding holes and a gasket holder clip for holding said gasket in alignment with said member, said clip comprising a bifurcated clip formed by a pair of legs connected together at one end by a bight portion no wider than the diameter of the holes of said underlying member, said legs being comprised of a first leg portion extending outwardly from the bight portion to a bent portion and a second leg portion extending from the bent portion, said second leg portion being connected to out-turned arms, said arms extending laterally a short distance such that when the legs are pressed together the arms can pass through said holes, said legs being biased together at the bight portion such that when they are passed together they tend to return to their original position and bear at the bent portion against the inner surface of the hole in said member, said second portions of said legs being bowed slightly inwardly of both said first leg portions and the holes in said underlying member when compressed and fitted in said bearing engagement within the holes in said member whereby the second portions of the legs adja-

cent the arms are spaced from the wall surfaces of the holes in said member and gasket and said arms overlie said gasket in restraining relation.

4,221,040

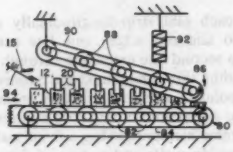
METHOD FOR MAKING PELLET FOR CHARGING FURNACES

Lewis D. Good, 7579 - 100th St., Caledonia, Mich. 49316

Division of Ser. No. 823,589, Aug. 11, 1977, abandoned. This application Aug. 2, 1978, Ser. No. 930,234

Int. Cl.[2] B23Q *17/00*

U.S. Cl. 29—403.2 **12 Claims**



1. A method for forming a pellet for charging a melting furnace comprising the steps of:

(1) inserting a quantity of metal pieces in a metal container having generally straight, unfolded, uncorrugated sides and an opening in at least one end such that said pieces engage and overlap one another within the container;

(2) compressing and permanently deforming said container and metal pieces together by applying a force to said container and metal pieces generally parallel to said container sides while the sides of said container are unsupported such that said sides become folded, wrinkled and corrugated and engage and clamp portions of said metal pieces firmly and tightly therebetween whereby said pellet is a compressed, densely packed metal mass with said metal pieces securely retained therewithin and across the entire container by overlapping engagement with one another and with said folds, wrinkles and corrugations.

4,221,041

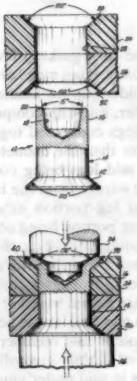
SEMI-TUBULAR RIVETS AND METHOD OF USING

Gerhart Hufnagl, Seattle, and Clark R. Zehnder, Renton, both of Wash., assignors to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Oct. 2, 1978, Ser. No. 948,075

Int. Cl.[3] B21D *39/00*; B23P *11/00*

U.S. Cl. 29—512 **5 Claims**



1. A rivet comprising: a titanium columbium alloy, a head, a shank sized to give a net to a clearance fit in a plastic part to be joined and having a concentric opening extending part way inward to form a tubular end to the shank, and the inside wall of the tubular end tapers outward at an angle of about 15 degrees to permit a button to be formed on the tubular end without expanding the shank of the rivet.

4. A method of joining parts at least one of which is a fiber reinforced plastic laminate, the steps comprising: drilling a hole through parts to be joined and countersinking on at least one side, selecting a semi-tubular rivet of titanium columbium alloy having a head and having an inside wall on the tubular portion that tapers outwardly at about 15 degrees, inserting the rivet with a net to a clearance fit in the hole in the parts, insuring that the open end of the tubular rivet is on the countersink side, placing a die on the open end with said die tapered at an angle greater than the angle of the countersink, and squeezing the rivet at a pressure sufficient to set the rivet by forming the open end of the rivet against the countersink.

4,221,042

COVERED WIRE WRAPPING TOOL

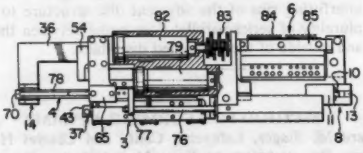
Masaaki Aida, Yokohama; Takashi Kobayashi, Fujisawa; Yukinori Taneda, Yokohama, and Noboru Sugimoto, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 7, 1978, Ser. No. 931,401

Claims priority, application Japan, Aug. 10, 1977, 52-95063

Int. Cl.[2] H02G *1/12*

U.S. Cl. 29—564.4 **5 Claims**



1. A covered wire stripping and wrapping apparatus comprising:

(a) a covered wire cutting and cover stripping device having cutter blade means and stripping blade means for cutting a covered wire into predetermined lengths and stripping the covering from leading end and trailing end portions thereof, respectively;

(b) a wrapping bit device separate from and adjacent to said wire cutting and stripping device, said bit device having a single wrapping bit, a movable sleeve and a movable style guide both of which at least partially surround said wrapping bit, and means for operating said wrapping bit device independent of said cutter and stripping blades for performing a wrapping operation on both said end portions; and

(c) a guide device having means for guiding said predetermined length of wire from said wire cutting and cover stripping device to said wrapping bit device.

4,221,043

AUTOMATIC TOOL CHANGER FOR MULTIPLE SPINDLE MACHINE TOOL

Frank E. Dailey, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 5, 1979, Ser. No. 17,708

Int. Cl.[3] B23Q *3/157*

U.S. Cl. 29—568 **13 Claims**

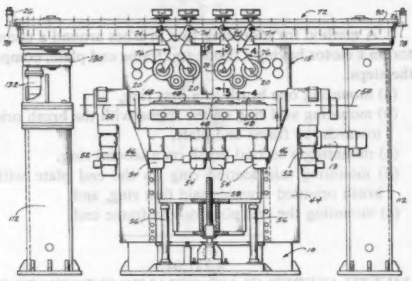
1. An automatic tool changer for a machine tool having a spindlehead and having a plurality of spindles mounted therein for rotation about spaced parallel axes, comprising:

a plurality of crossed tool change arms mounted on a com-

mon tool change shaft for rotation about the axis of said shaft and for axial movement along the axis of said shaft;

a tool gripper on each end of every tool change arm, said tool grippers, tool change arms and spindles being positioned to enable tools to be simultaneously inserted into or withdrawn from all of said spindles by the tool grippers on one end of each tool change arm;

a tool storage magazine having a plurality of tool sockets for storing tools and having one ready station for each of said tool change arms, said ready stations being located to enable tools to be simultaneously inserted into or withdrawn from the tool sockets which are in said ready station by the tool grippers on one end of each tool change arm, said tool sockets being spaced apart by a distance



which enables the tools to be arranged in spaced interspersed relationship so that a predetermined set of tools can be simultaneously removed from said tool sockets;

means for moving each tool gripper into and out of engagement with the tool in the corresponding spindle or tool socket;

means for moving said tool change shaft axially outwardly far enough to withdraw tools from said spindles and said tool sockets and for moving said tool change shaft axially inwardly far enough to insert tools into said spindles and tool sockets; and

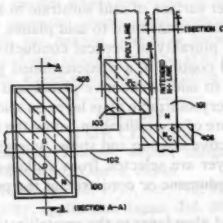
means for rotating said tool change shaft by 180° when it is in its outward position to interchange the ends of said tool change arms to transfer tools from said tool sockets to said spindles and from said spindles to said tool sockets.

4,221,044

SELF-ALIGNMENT OF GATE CONTACTS AT LOCAL OR REMOTE SITES

Gordon C. Godejahn, Jr., Santa Ana, and Gary L. Heimbigner, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 6, 1978, Ser. No. 913,182
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **26 Claims**



1. A process for fabricating on a layer of monocrystalline silicon a very large scale integrated circuit device, containing field effect transistors, polysilicon interconnect lines, and diffused interconnect lines, comprising the steps of:

1. oxidizing said silicon layer to form a first silicon dioxide layer on a surface thereon;
2. applying a first layer of silicon nitride over the surface of the first silicon dioxide layer;
3. selectively removing portions of said first silicon nitride layer, leaving portions of said first silicon nitride layer juxtaposed over areas wherein field effect transistors and diffused interconnect lines are to be formed;
4. oxidizing portions of said silicon layer to produce a very thick layer of silicon dioxide over said surface of the silicon except at those areas juxtaposed beneath the remaining portions of said first silicon nitride layer;
5. depositing a layer of polysilicon having dopant ions therein over said surface of the device;
6. oxidizing the surface of said polysilicon layer to form a second layer of silicon dioxide thereon;
7. applying a second layer of silicon nitride on top of the surface of the second silicon dioxide layer;
8. removing, by a selective removal process, all of said second nitride layer except for a region juxtaposed over the area in which a polysilicon interconnect line contact is to be formed;
9. applying a layer of silicon dioxide containing dopant ions therein over the surface of said device;
10. selectively removing all of the silicon dioxide layer containing dopant ions except at those regions juxtaposed over areas in which gates of the field effect transistors and the polysilicon interconnect lines are to be formed;
11. selectively removing the portions of said silicon nitride layers exposed by the removal of said silicon dioxide layer containing dopant ions;
12. selectively removing the exposed portions of any of said silicon dioxide layers exposed by the removal of said silicon nitride layers;
13. selectively removing the exposed portions of said polysilicon layer exposed by the removal of any of said silicon dioxide layers;
14. selectively removing all of the exposed portions of said silicon nitride layer except for those regions juxtaposed over areas to be formed into said field effect transistors and the contact of said diffused interconnect lines;
15. oxidizing said device whereby a additional layer of silicon dioxide is formed over said diffused interconnect lines and at least a portion of said polysilicon interconnect lines;
16. batch removing said silicon dioxide layer containing dopant ions;
17. removing said exposed silicon nitride layer exposed by the removal of said silicon dioxide layer containing dopant ions;
18. removing any of said remaining silicon dioxide layers from the areas wherein contact to the sources, gates, and drains of said field effect devices, the polysilicon interconnect line contact, and the diffused interconnect line contact are to be formed;
19. selectively applying conducting interconnection lines to said contact areas exposed by the removal of said remaining silicon dioxide layers.

4,221,045

SELF-ALIGNED CONTACTS IN AN ION IMPLANTED VLSI CIRCUIT

Gordon C. Godejahn, Jr., Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 6, 1978, Ser. No. 913,184
Int. Cl.[3] B01J *17/00*
U.S. Cl. 29—571 **20 Claims**

1. A process for forming very large scale integrated circuits on a monocrystalline silicon semiconductor substrate comprising the steps of thermally growing a first silicon dioxide layer on a first surface of said silicon semiconductor substrate,

selectively applying a first silicon nitride layer on said first

silicon dioxide layer, said first silicon nitride layer being applied at least in a first selected area in which a field effect semiconductor device is to be formed and in at least a second selected area in which a diffused conducting line is to be formed,

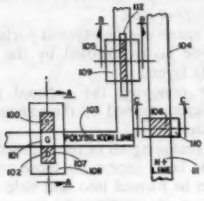
thermally oxidizing said silicon semiconductor substrate whereby thick field oxide regions are grown surrounding said first and second selected areas whereby said first silicon nitride layer substantially prevents the growth of additional silicon dioxide regions in said portions of said silicon substrate thereunder and whereby said thermal oxidation forms a thin silicon oxynitride layer on the surface of said first silicon nitride layer,

forming a polysilicon layer on the surface of said silicon oxynitride layer and said field oxide region, said polysilicon layer extending over said selected areas,

forming a second silicon dioxide layer on top of said polysilicon layer,

selectively applying a silicon nitride stripe on said second silicon dioxide layer juxtaposed on one of said field oxide regions,

selectively removing portions of said second silicon dioxide layer and said polysilicon layer to define a polysilicon gate electrode extending transversely and centrally of said selective area for said active device and to define a polysilicon line traversing at least one of said field regions, the surface of said polysilicon layer covered by portions of



said second silicon dioxide layer and said silicon nitride stripe, said polysilicon line having a width greater than that of said silicon nitride stripe in the area immediately surrounding said silicon nitride stripe,

oxidizing said polysilicon gate electrode and line, covered with said second silicon dioxide layer, to form a thick third silicon dioxide layer thereon, whereby said first silicon nitride layer and said silicon nitride button substantially prevent the formation of silicon dioxide thereunder,

selectively removing portions of said first silicon nitride layer and said silicon stripe, wherein the remaining portions thereof define areas on the surface of said silicon semiconductor substrate to become the source and drain contacts of said field effect device, the polysilicon line contact and the diffused line contact,

thermally oxidizing the surface of the diffused line and the polysilicon line, whereby said first silicon nitride layer and said silicon nitride stripe protect the polysilicon layer and the silicon semiconductor substrate thereunder from substantially forming a silicon dioxide layer,

batch removing in sequence the exposed silicon oxynitride, silicon nitride, and silicon oxide layers, whereby said source and drain contacts, polysilicon line contact, and diffused line contact are exposed,

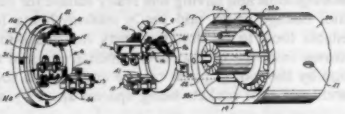
providing electrical interconnections to said source and drain contacts, polysilicon line contact, and diffused line contact.

4,221,046

METHOD FOR ASSEMBLING A BRUSH CAGE

Clyde M. Hayes, Lambertville, Mich., assignor to Eltra Corporation, Toledo, Ohio

Division of Ser. No. 775,084, Mar. 7, 1977, Pat. No. 4,114,061.
This application Aug. 7, 1978, Ser. No. 936,288
Int. Cl.³ H02K *15/10*
U.S. Cl. 29—596 **2 Claims**



1. A method for mounting two brushes around a commutator on a motor having a frame and frame end plate, comprising the steps:

(a) mounting one brush to a first ring,

(b) mounting said ring on the frame with the brush oriented towards the frame end plate,

(c) mounting a second brush on a second ring,

(d) mounting said second ring on the end plate with the brush oriented towards said first ring, and

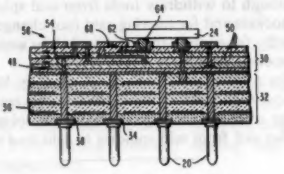
(e) mounting the end plate on the frame end.

4,221,047

MULTILAYERED GLASS-CERAMIC SUBSTRATE FOR MOUNTING OF SEMICONDUCTOR DEVICE

Bernt Narken, Poughkeepsie, and Rao R, Tummala, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,113
Int. Cl.³ H05K *3/10, 3/38, 3/46*
U.S. Cl. 29—840 **13 Claims**



1. A method for fabricating a solid thermally compatible and integral glass-ceramic/metal electrical interconnection package adapted for bonding to semiconductor integrated circuit chips, comprising the steps of:

(a) providing a glass-ceramic substrate having a plurality of metallized conductive planes interconnected together in a predetermined pattern,

(b) forming a coating of a first metallized conductive pattern on the upper surface of said substrate in a predetermined pattern of interconnection to said planes,

(c) forming a plurality of vertical conductive studs on said surface and coating in a predetermined pattern of interconnection to said conductive planes and coating,

(d) forming a crystallizable glass layer on said surface having a temperature of crystallization below the melting point of said conductive coating and studs, wherein said substrate and said layer are selected from a glass-ceramic having either β-spodumene or cordierite as the principle crystalline phase,

(e) heating said glass layer to the crystallization temperature thereof for sufficient time to crystallize said glass into a bubble-free glass-ceramic layer, said crystallization being effected without reflow of any underlying glass-ceramic

layers or disruption of any lower levels of metallization and

(f) conditioning said glass-ceramic layer to expose at the top surface thereof said vertical conductive studs.

4,221,048

HAND-GRIP CUTTING TOOLS

Thomas S. Parramore, Bournemouth, Dorset, England, assignor to National Research Development Corporation, London, England

Filed Apr. 28, 1978, Ser. No. 901,206
Int. Cl.³ B26B *17/02*
U.S. Cl. 30—135 **2 Claims**

1. A hand grip tool including:

a support member having a support handle;

a first and a second anvil plate both mounted in plane parallel relationship upon the support member, the first anvil plate having a first cutting edge and the second anvil plate having a locating edge spaced from said first cutting edge;

a work member pivotally connected to and slidable between said first and second anvil plates, said work member having a second cutting edge engagable with said first cutting edge to cut an object, said working member having non-cutting means co-operable with said locating edge to locate and secure said object while said object is being cut by said first and second cutting edges;

a cam pivotally connected to said support member and abutting said work member;

a biasing means operative between said work member and said support member for holding the work member against the cam;

a ratchet wheel coupled with said cam;

an operating handle pivotally connected to said support member and biased away from said support handle;

a drive pawl pivotally connected to said operating handle and biased to engage with said ratchet wheel, thereby to rotate the ratchet wheel and said cam when the operating handle is squeezed towards said support handle; and

a non-return mechanism operative between said support member and said ratchet wheel so as to prevent rotation of the ratchet wheel when said operating handle is released.

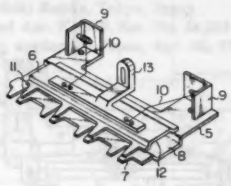
4,221,049

HAIR CLIPPER

Tetsuo Hamashima, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 26, 1978, Ser. No. 927,983
Claims priority, application Japan, Jul. 30, 1977, 52-92683
Int. Cl.³ B26B *19/22*
U.S. Cl. 30—195 **5 Claims**

1. A hair clipper comprising a fixed blade and a movable blade, said fixed blade including a plurality of notches spaced along an outer edge thereof, said movable blade including a plurality of movable cutting teeth spaced along an outer edge thereof, there being a corresponding tooth for each notch, said movable blade being slidable relative to said fixed blade in pressed contact therewith and at an amplitude of movement such that each cutting tooth of said movable blade completely



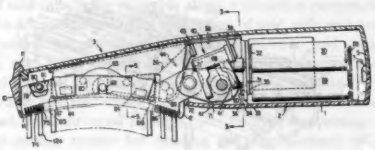
traverses only one corresponding notch of said fixed blade during a stroke of said movable blade, and at an end of the stroke all of said teeth and notches are disposed in non-overlapping relationship, said notches arranged at a first frequency and said teeth arranged at a second frequency, one of said first and second frequencies being uniform, the other being non-uniform.

4,221,050

CUTTING TOOL

Henry J. Walter, Wilton, Conn., and William Mack, Commack, N.Y., assignors to Clairol Inc., New York, N.Y.

Filed Aug. 11, 1977, Ser. No. 823,796
Int. Cl.² B26B *19/02*
U.S. Cl. 30—216 **17 Claims**



1. A hair cutting instrument comprising a housing having an elongated handle portion, first and second blades mounted in shearing relationship and extending generally longitudinally with respect to said elongate handle,

reciprocation means for reciprocating at least one of said blades substantially parallel with the long axis of said handle,

stroke means for varying the length of stroke of reciprocation,

a hair-grooming member on said housing adjacent said blades, and

an extension of said housing adjacent said blades, means for normally retracting said blades into said housing extension, and lever means for selectively projecting said blades from said housing extension to adjacent said hair grooming member.

4,221,051

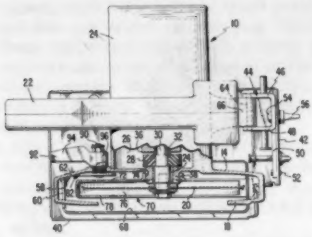
CIRCULAR SAW WITH IMPROVED BASE PLATE ADJUSTMENT

James L. Glass, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,778
Int. Cl.³ B27B *9/00*
U.S. Cl. 30—377 **6 Claims**

1. In a portable, power operated circular saw having a housing or frame and a base plate pivotally connected at its forward end to the saw housing or frame for swinging movement about

an axis parallel the axis of rotation of the blade mounting shaft, base plate inclination adjustment means comprising an adjustment arm having an elongated arcuate portion provided with an elongated arcuate slot generally concentric the pivotal axis of the base plate and a clamping member extending through



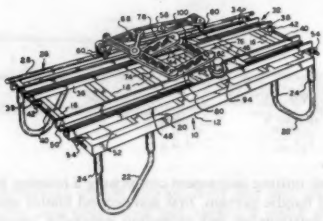
the arcuate slot for clamping the adjustment arm selectively at a fixed position relative the saw housing or frame, the clamping member being actuated by relative rotation between a pair of camming members having opposed cooperating interacting inclined ramps or cam surfaces, at least one of the cam members being adapted to be rotated by an operating lever.

4,221,052

SIGN CUTTING MACHINE

James E. Wagoner, Swanton, Ohio, assignor to Quality Industries, Hillsdale, Mich.

Filed Dec. 7, 1978, Ser. No. 967,237
Int. Cl.[3] B43L *13/10*
U.S. Cl. 33—25 B **4 Claims**



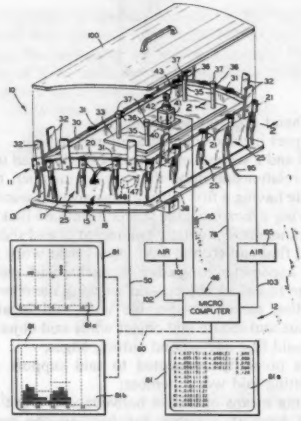
1. A sign cutting machine comprising, in combination, a frame having an upper supporting surface, a rear edge and a front edge, first means for supporting a sign board to be routed upon said supporting surface adjacent said front edge, second means for supporting a template upon said supporting surface, a template supported upon said second means having a planar upper face and recesses defined in said face for receiving a template follower, a track mounted on said frame adjacent said rear edge comprising an enlongated shaft of circular cross section, a carriage mounted upon said track for movement thereon, said carriage including a plurality of contoured rollers located on opposite sides of said shaft mounted for rotation about an axis perpendicular to the longitudinal axis of said shaft and adapted to seat on said shaft and contact said shaft at the contoured portion and be lifted from said shaft permitting pivoting of said carriage about the length of said shaft and longitudinal movement along said shaft, a four-element linkage mounted upon said carriage extending over said supporting surface carriage, said linkages including a first rigid link connected to said carriage, second and third rigid links pivotally attached to said first link at spaced locations and a fourth rigid link pivotally attached to said second and third links, a plurality of spaced pivot receivable holes defined in each of said links having axes transversely disposed to the length of the associated link, an electrically driven router affixed to one of said links, and a template follower mounted on said linkage having a projection adapted to be received within said template recesses whereby said linkage may be removed through a pattern determined by said template recesses permitting said router to cut said sign board in a manner determined by said template, said template follower including template face engaging means mounted on said follower adjacent said projection for preventing excessive template follower projection forces on said recesses and being located intermediate said router and said carriage, said second means supporting said template being located intermediate said track and said first means supporting a sign board.

4,221,053

INSPECTION APPARATUS

Robert J. Bobel, II; Richard H. Blausey, Jr.; Edward D. Floyd; Donald B. Hopings, all of Toledo; Russell C. Retzloff, Maumee, and Andrew W. Rudolph, Elmore, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Nov. 13, 1978, Ser. No. 959,631
Int. Cl.[3] G01B *7/28*
U.S. Cl. 33—174 L **20 Claims**



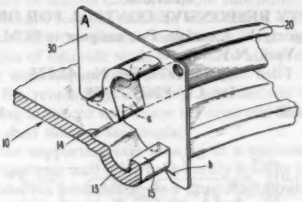
1. A probe assembly for use in a sheet contour inspecting apparatus comprising: an elongated body having at one end thereof a head portion provided with an axial bore therethrough, a removable probe disposed in said bore for axial movement therein, said probe having a sensing head at one end thereof protruding outwardly of said bore and engageable with a sheet to be checked, electric means releasably secured within said body for sensing the position of said probe and including means for generating an electrical signal proportionate to the axial position of said probe, said body having a cut-out section intermediate the opposite ends thereof for providing access to said sensing means, said sensing means including a reciprocal plunger coaxially aligned with said probe and engageable at one end thereof with the other end of said probe for movement, as a unit, therewith, a movable piston mounted within said body adjacent the other end thereof, the other end of said plunger extending into said piston, said piston being formed with a slot permitting lateral withdrawal of said plunger other end from said piston when withdrawing said sensing means through said cut-out section for easy removal and replacement.

4,221,054

MULTI-PIECE PNEUMATIC TIRE RIM COMPONENT COMPARISON PLATES

Lester P. Schaevitz, Llanalew No. 10, 100 Llanalew Rd., Haverford, Pa. 19041

Filed Apr. 13, 1979, Ser. No. 29,611
Int. Cl.[2] G01B 3/14
U.S. Cl. 33—174 G 8 Claims



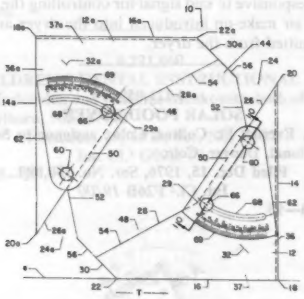
1. A comparison plate for matching separate components of a multi-piece tire rim, one component of which is a split ring, said plate having at least two separate contoured edge surfaces, at least one of said contoured edge surfaces comprising the entire peripheral edge of an irregularly shaped hole through said plate into which the free end of said split ring is inserted for matching comparison of the size and configuration of the cross section of said split ring, and at least one of said contoured edge surfaces comprising a portion of the peripheral edge of said plate for matching comparison with an annular non-split component of said rim.

4,221,055

DRAFTING INSTRUMENT

Randy D. Delgado, 3209 Meyer, Saginaw, Mich. 48603

Filed Dec. 7, 1978, Ser. No. 967,297
Int. Cl.[3] B43L 13/00
U.S. Cl. 33—418 15 Claims



1. A drafting instrument comprising:

a central, generally planar member;

first and second drafting plates, each including two sides having first and second angularly related, intersecting straight edges forming an angle therebetween and third hypotenuse edge means spanning said first and second edges; and

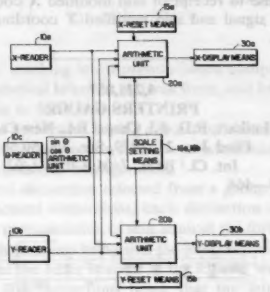
means pivotally coupling said first and second plates to said central planar member for swinging movement relative thereto; said central member including first and second ends and laterally opposite sides, each of said sides including outwardly converging, opposite end edge portions spanned by a central edge portion, said third hypotenuse edge means including inner edge portions complemental to said central edge portion and one of said opposite and edge portions.

4,221,056

UNIVERSAL PARALLEL RULER WITH CONVERTED DISPLAY OF DISPLACEMENT

Masao Koenuma, Higashiooizumi, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,353
Claims priority, application Japan, Apr. 10, 1978, 53-42022; May 1, 1978, 53-52482
Int. Cl.[3] B43L 13/00
U.S. Cl. 33—438 3 Claims



1. A track type universal parallel ruler including a display means representing the displacement of an X axis rail and a Y axis rail, said rails being arranged in perpendicular relationship relative to each other, one of said rails being stationary, the other of said rails being movable along a direction perpendicular to the longitudinal axis of said other of said rails and maintaining said perpendicular relationship relative to said stationary rail, said ruler including a head, said head having scales attached thereto, said scales being displaceably mounted along the movable rail, said scales capable of being rotated relative to said head, said universal parallel ruler further comprising:

a first reader means for reading the displacement of the movable rail relative to the stationary rail thereby generating a first displacement signal indicative of the displacement of said movable rail relative to the stationary rail;

a second reader means for reading the displacement of said head relative to said movable rail thereby generating a second displacement signal indicative of the displacement of said head relative to said movable rail;

a third reader means for reading the rotation angle displacement of said scales relative to said head thereby generating a third displacement signal indicative of the rotation angle displacement of said scales relative to said head;

an arithmetic operation means responsive to said first and said second displacement signal for performing an arithmetic operation on the displacements in the X and Y direction represented by the head relative to the movable rail and the movable rail relative to the stationary rail thereby generating an X coordinate directional signal representative of an X displacement direction length relative to a first X and a first Y reference axis centered at a common point, and generating a Y coordinate directional signal representative of a Y displacement direction length relative to said first reference axes centered at said common point, said X and Y coordinate directional signals establishing an (X,Y) coordinate point relative to said first reference axes centered at said common point and representing the combined displacements of said head relative to said movable rail and said movable rail relative to said stationary rail;

said arithmetic operation means performing a further arith-

metic operation on the displacements represented by said (X,Y) coordinate point relative to said first reference axes in response to said third displacement signal thereby generating a modified X coordinate directional signal and a modified Y coordinate directional signal representing a modified X and a modified Y displacement direction length relative to a new X and a new Y reference axis, said X and Y displacement direction length being modified in response to the establishment of said new X and said new Y reference axis, said new reference axes being established by orientation of said X and Y scales at an angle equal to said rotation angle displacement of said X and Y scales centered at said common point; and

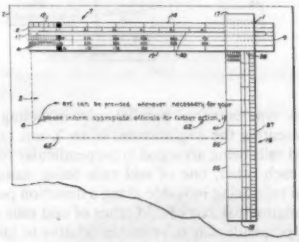
digital display means for digitally displaying said modified X and said modified Y displacement direction length in response to receipt of said modified X coordinate directional signal and said modified Y coordinate directional signal.

4,221,057

PRINTERS GAUGE

Walter W. Luikart, R.D. #3, Chapel Rd., New Castle, Pa. 16105

Filed Jun. 21, 1979, Ser. No. 50,661
Int. Cl.³ B43L *7/06*; G01B *3/02*
U.S. Cl. 33—464 **8 Claims**



1. A gauge for measuring the size of typographical characters on printed material and for counting the number of such characters and the number of typographical lines comprising:

(a) first transparent reading means having a first end and a second end, said first transparent reading means further having a plurality of sets of parallel lines integral therewith disposed from said first end to said second end, each of said sets of lines containing a predetermined number of lines, said first transparent reading means further having a plurality of sets of discrete spaces integral therewith, said spaces being defined by a plurality of lines perpendicular to said sets of parallel lines, and disposed from said first end to said second end, said spaces having predetermined widths; and

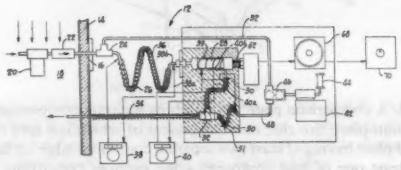
(b) second transparent reading means having a first end and a second end and a first edge and a second edge, said second transparent reading means being slidably mounted at said first end of said second transparent reading means to said first transparent reading means such that said second transparent reading means is slidable relative to said first reading means and further that said first transparent reading means and said second transparent reading means remain substantially perpendicular, said second transparent reading means further having a plurality of sets of parallel lines integral therewith disposed from said first end to said second end of said second transparent reading means each of said sets of lines containing a predetermined number of lines, and further having a plurality of sets of discrete spaces integral therewith, said spaces being defined by a plurality of lines perpendicular to said sets of parallel lines on said first transparent reading means, said spaces having predetermined widths, and being disposed from said first edge of said second transparent reading means to said sets of parallel lines, whereby said typographical characters on said printed material are locatable within at least one set of said plurality of sets of said discrete spaces of said first transparent reading means and said second transparent reading means and further said lines of said typographical characters are locatable in position relative to at least one of said sets of parallel lines on said second transparent reading means.

4,221,058

HUMIDITY RESPONSIVE CONTROL FOR DRYERS

Peter E. Zagorzycki, Lansdale, Pa., assignor to SCM Corporation, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,523
Int. Cl.³ F26B *21/08*
U.S. Cl. 34—50 **10 Claims**



1. A control system for high temperature dryers comprising

sample taking means for sampling the dryer air including an intake opening in communication with the dryer air;

a sampling chamber and intake conduit means between said sampling chamber and intake opening;

means for maintaining said sampling chamber at a controlled temperature, said intake conduit means including cooling means for cooling the incoming dryer sample air to approximately the temperature of said chamber, and heating means to prevent such cooling from going below dew-point temperature;

means associated with said sampling chamber responsive to the humidity in said sampling chamber for producing a signal proportional to the humidity; and

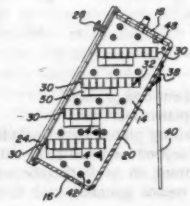
means responsive to said signal for controlling the amount of fresh air make-up introduced into the dryer and exhaust air emitted from the dryer.

4,221,059

SOLAR FOOD DRYER

Stanley K. Everitt, Ft. Collins, Colo., assignor to Solar Saver International, Denver, Colo.

Filed Dec. 15, 1976, Ser. No. 750,889
Int. Cl.² F26B *19/00*
U.S. Cl. 34—93 **3 Claims**



1. A solar food dryer comprising:

a box-shaped housing having a pair of mutually space-opposed side walls, a pair of mutually space-opposed end walls individually joining respective end margins of said side walls, a back wall the peripheral margins of which are joined with the corresponding rear margins of said side

and end walls to close the rear of said housing and the forward margins of said side and end walls defining an opening extending substantially across the front of said housing, with the material of said walls being substantially opaque to sunlight;

a cover dimensioned to span said opening and of a material substantially transparent to sunlight;

means for securing said cover in removable closing relationship to said opening;

a plurality of shelves each of a width substantially spanning the distance between said side walls and of a depth to span substantially the distance between said rear and forward margins of said side walls when tilted at a predetermined angle with respect to said end walls;

means for removably mounting said shelves within said housing in spaced succession between said end walls with each shelf tilted at said angle;

means for supporting said housing in a stationary position with said rear wall tilted backwardly from its top to orient said shelves substantially in a horizontal position;

means defining apertures in said housing for enabling air flow upwardly therethrough when said housing is in said stationary position, said defining means establishing a first plurality of apertures distributed in said side walls with individual different one thereof being adjacent to respective different ones of said shelves and a second plurality of apertures distributed in the one of said end walls uppermost when said housing is in said stationary position, and said apertures being so distributed and having a total cross-sectional area of an amount enabling a flow of said air at a rate limiting the temperature within said housing, with said cover in said closing relationship and exposed to direct sunlight, to a minimum value of approximately one hundred-forty degrees Fahrenheit;

screening disposed across said apertures and of a mesh transmissive of air flow but protective against the passage of insects, said screening being in the form of a continuous layer of mesh material;

an inner wall of said housing disposed to sandwich said mesh material against the inner surfaces of said side walls;

and said mounting means including elongated lugs projecting integrally from said inner wall into the interior of said housing.

4,221,060

CHILDREN'S DENTAL INSTRUCTIONAL KIT

William Moskowitz, and Francine Moskowitz, both of 52 Girard St., Marlboro, N.J. 07746

Filed Jan. 15, 1979, Ser. No. 3,787
Int. Cl.[3] G09B *19/00*
U.S. Cl. 35—17 **9 Claims**

1. A children's dental instructional kit comprising: a doll's head having eyes, ears, nose, mouth, lips, cheeks and a set of teeth. and wherein said mouth, lips and cheeks are selected of a resilient composition to permit simulated brushing of said teeth by a toothbrush; a first solution to coat the teeth of said doll's head in providing a given visual appearance thereto; and a second solution to further coat the teeth of said doll's head during brushing to change the visual appearance given thereto by said first solution.

4,221,061

CLUED LETTER SET

Carl L. Settle, 2161 Plantation La., Atlanta, Ga. 30341

Filed Jun. 7, 1978, Ser. No. 913,342
Int. Cl.[3] G09B *17/00*
U.S. Cl. 35—35 R **13 Claims**

1. An aid for teaching word pronunciation comprising:

a set of alphabetical letters in material form, said letters being arrangeable to form words;

at least one of said letters having a structural distinction from other letters in said set, in addition to conventional differences of alphabetic configuration;

said structural distinction selected from a group of at least three structural distinctions, each distinction denoting a particular pronunciation of said letter in the formed word;

one of said distinctions being that the letter is transparent, to denote that the letter is silent in the formed word;

another of said distinctions being that the letter is of a greater height than the other letters, to denote that the letter is to be pronounced with a long vowel sound;

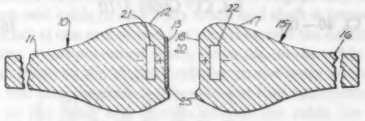
still another of said distinctions being that the letter is in the shape of an object, to denote that the letter is to be pronounced as in the word for the depicted object.

4,221,062

APPARATUS FOR DEMONSTRATING TRANSMISSION OF NERVE IMPULSES

Bruce E. Turner, 217 Eight Mile Road, Cincinnati, Ohio 45230

Filed Jan. 8, 1979, Ser. No. 1,877
Int. Cl.[3] G09B *23/32*
U.S. Cl. 35—49 **11 Claims**

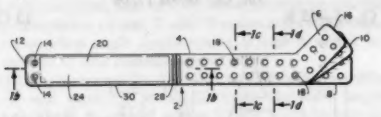


1. Apparatus for simulating passage of neurochemical transmitters from a presynaptic neuron across a synaptic cleft to a postsynaptic neuron and for simulating the effect of an antidepressant drug in blocking re-uptake of said neurochemical transmitters by said presynaptic neuron, said apparatus comprising a pair of elongated non-magnetizable members each having an enlarged, bulbous end portion, each said end portion having a substantially flat face, means exerting a magnetic field in each said bulbous end portion, said means being so oriented that the magnetic fields oppose one another when said flat faces are brought into approaching face-to-face relation, one of said magnetic fields being stronger than the other at said flat face, and a magnetizable disc attracted by said magnetic fields, whereby when said magnetizable disc is attracted by and held initially on said flat face having the weaker magnetic field and the flat faces are brought into approaching face-to-face relation, said disc is attracted by said stronger magnetic field and traverses the gap between said faces to said face having said stronger magnetic field.

4,221,063
TAMPER-RESISTANT IDENTIFICATION DEVICE

Stanley E. Charles, La Canada; Donald A. Long, Burbank, and Arthur H. Schimmelman, Agura, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.

Filed Jul. 6, 1976, Ser. No. 702,335
Int. Cl.[3] G09F 3/14
U.S. Cl. 40—21 C 14 Claims

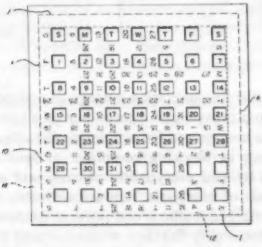


1. In an identification device, the combination of: an elongated, flexible band for encircling an object to be identified, said flexible band having a first end portion, an intermediate portion, and a second end portion, said first end portion having at least two spaced apertures adjacent the terminus thereof, said second end portion having at least two spaced apertures adapted to be aligned with at least two spaced apertures in said first end portion; and dual securement means insertible in said aligned apertures of said first and second end portions to securely fasten and retain said first and second end portions when said flexible band is positioned in an encircling configuration, said securement means comprising rivet stud means insertible through said aligned openings and having upper extremities crimped into overlying relationship with the contiguous portion of said flexible band, said rivet stud means being integral with a mounting plate; and a flange plate positioned on top of the overlying-underlying end portions and said rivet stud means being crimped thereover, said flange plate being provided with spaced apertures to receive said rivet stud therethrough and being of deformable metal and integrally connected to said mounting plate to overlie said mounting plate.

4,221,064
DEVICE FOR DISPLAYING INDICIA

James A. Sebastian, 24 Pinecrest Dr., Hastings-on-Hudson, N.Y. 10706

Continuation of Ser. No. 675,966, Apr. 12, 1976, abandoned.
This application Jan. 19, 1978, Ser. No. 870,636
Int. Cl.[2] G09D 3/10
U.S. Cl. 40—109 16 Claims

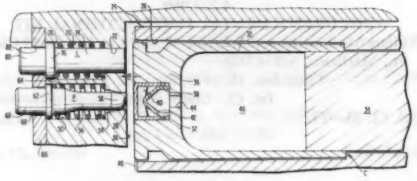


1. A device for displaying indicia comprising:
(a) at least one cover member having at least one visual display means disposed at a predetermined location on at least one surface thereof; and
(b) a display member having at least one surface extending substantially parallel to the one surface of said at least one cover member and being of a predetermined configuration, said display member being movable in at least two directions with respect to said at least one cover member within a predetermined area having said predetermined configuration and underlying said at least one cover member, the at least two directions being disposed at an angle to one another and extending substantially parallel to the surface of the display member, said display member and said predetermined area having an uppermost and lowermost portion with respect to each of a plurality of predetermined orientations of said device and said display member being maintained within said predetermined area so as to prevent substantial rotation of said display member relative to said at least one cover member within said predetermined area, said display member having a number of locations on the at least on surface thereof at least equal to the number of predetermined orientations, each of said locations being suitable for receiving at least one indicium and at least one indicum being applied to at least one of said locations, a different one of said locations being in registry with at least one of said visual display means when said device is positioned in a a different one of the plurality of predetermined orientations in a substantially vertical plane with the lowermost portion of the display member adjacent the lowermost portion of the predetermined area underlying said at least one cover member, said locations being of a size and orientation upon said display member that a rotation from a first predetermined orientation of said device in said vertical plane to at least on other predetermined orientation causes said display member to shift position in one of the at least two directions with respect to said at least one cover member, by gravity and gravity alone, until another lowermost portion of said display member is adjacent another lowermost portion of the predetermined area thereby automatically causing one location to be removed from registry with said visual display means and another location to be in registry with said visual display means.

4,221,065
FIRING MECHANISM FOR REVOLVERS

Roger J. Curran, Stratford, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Aug. 2, 1978, Ser. No. 930,276
Int. Cl.[3] F41C 1/00
U.S. Cl. 42—65 13 Claims



1. A revolver comprising:
a revolver frame,
a cylinder with multiple chambers for receiving cartridges and rotatably carried by said frame for selective registration of the cartridges in a firing position,
a bolster face in opposition to the rear face of said cylinder,
means carried by said frame for firing the cartridge in firing position including a firing pin carried for movement between a non-firing first position and a second position for firing the cartridge by penetrating its base,
means carried by said frame and engageable with the cartridge in firing position including a limit pin carried between a first position and a second position for limiting the extent of penetration of said firing pin into the base of the cartridge when said firing pin is moved into said second position,
said bolster face having a pair of apertures for receiving said limit pin and said firing pin, said limit pin and said firing

pin being carried for movement through said apertures, and

means carried by said frame and engageable with said firing pin and said limit pin for moving said pins into their second positions.

4,221,066

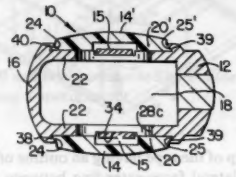
FIREARM GRIP ASSEMBLY

Robert L. Hillberg, Cheshire, Conn., assignor to Wildey Firearms Company, Inc., Cold Spring, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,191

Int. Cl.³ F41C *23/00*

U.S. Cl. 42—71 P **9 Claims**



1. A firearm grip assembly comprising a handle member having a longitudinally extending channel opening laterally outwardly through one side and longitudinally outwardly through one end thereof, a panel member received in said channel, coengagable means on said handle member and said panel member for restraining said panel member against lateral movement relative to said handle member when said panel member is in assembled position within said channel, and concealed means carried by one of the members comprising said handle member and said panel member and engagable with the other of said members when said panel member is assembled with said handle member for releasably retaining said panel member in assembly with said handle member.

4,221,067

FISHING IMPLEMENT

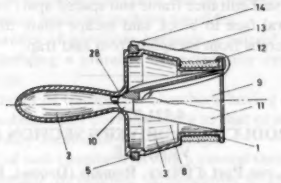
Sverre Thorvaldsen, Hageveien, Bede, 1700 Sarpsborg, Norway

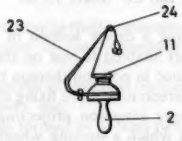
Filed Nov. 8, 1978, Ser. No. 958,683

Claims priority, application Norway, Nov. 11, 1977, 773866

Int. Cl.³ A01K *91/00*

U.S. Cl. 43—18 R **7 Claims**





1. A casting reel comprising a hollow body having a longitudinal axis and a forward end, said body being circular in transverse cross-section and having an axially facing opening at its forward end for receiving a fishing line, said body having a spooling portion at said forward end, said spooling portion having an external cylindrical surface coaxial with said longitudinal axis, around which a fishing line may be wound and said spooling portion terminating at the forward end of said reel in a radially outwardly projecting flange which circumscribes said axially facing opening, said body having an intermediate portion axially adjacent said spooling portion, said intermediate portion having an external conical surface tapering outwardly and rearwardly, the axial length of said conical portion being approximately the same as the axial length of said cylindrical portion, an elongated handle extending from the rear end of said body, said handle being coaxial with said body and of lesser cross-section than said body.

4,221,068

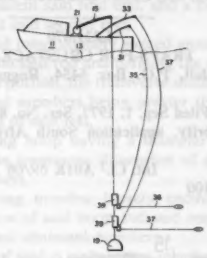
FISH LINE HOLDER

Leonhard J. Roemer, Jr., 27 Forgham Rd., Greece, N.Y. 14616

Filed Dec. 15, 1978, Ser. No. 970,001

Int. Cl.³ A01K *97/00*

U.S. Cl. 43—43.12 **9 Claims**



8. A fish line holder for down rigger fishing, comprising a body, first means for releasably holding said body at a desired elevation on a control cable, and second means for releasably clamping a fishing line to said body, said first means including a rotary shaft of substantially circular cross section concentric with the axis of rotation of the shaft throughout the major portion of its periphery and having a flat spot at one portion of its periphery, said shaft being positioned to engage said cable and clamp said cable to said body when said shaft is turned so that a corner at one end of said flat spot is against the cable, the parts being so proportioned that a sharp tug on the cable will cause the cable to slip slightly relative to the body and such slipping will turn the shaft to bring the flat spot approximately parallel to the cable and thereby release the cable for free longitudinal movement.

4,221,069

BAIT HARNESS

Jack N. Esses, 9612 Ashmont, St. Louis, Mo. 63132

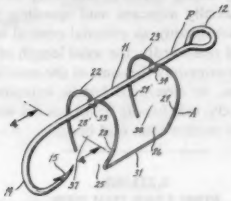
Filed Nov. 1, 1978, Ser. No. 956,867

Int. Cl.³ A01K *83/06*

U.S. Cl. 43—44.2 **6 Claims**

1. For use with a fishhook including an elongated shank and a hook portion at one end thereof, an integrally formed bait harness for resiliently engaging said shank, said harness comprising a single, continuous length of resilient, spring-like, non-ductile material forming first and second sets of spaced apart sets of arm members, each said set of arm members being constituted by an opposed pair of curvilinear portions of said resilient material and defining a bait-receiving recess therebetween, said curvilinear portions being oriented in bait-conforming loop configuration for extending partially around a bait, the arms of each set being integrally joined at a central portion and having portions remote from said central portion,

said remote portions being spaced apart to provide said bait-receiving recess there between, each said central portion including a bight for resiliently engaging said shank, each said bight being constituted by a convolution of said resilient material extending in the direction of said bait-receiving recess but



opening outwardly from said recess, and a portion of the length of said resilient material extending between remote portions of at least one arm of each set to maintain said sets of arms in spaced apart relationship on said shank, thereby to secure a bait on said fishhook adjacent said hook portion.

4,221,070

TRAPS FOR CRUSTACEANS

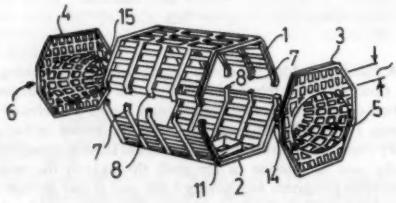
Samuel Swindell, P.O. Box 6454, Roggebaai, South Africa (8012)

Filed Sep. 1, 1977, Ser. No. 829,648

Claims priority, application South Africa, Nov. 17, 1976, 76/6874

Int. Cl.[2] A01K *69/08*

U.S. Cl. 43—100 **2 Claims**



1. A trap for crustaceans and fish which comprises a plastic mesh forming longitudinally extending walls and end walls whose shape in outline is approximately prismatic, the cross-sectional shape of the prism being polygonal, the end walls being approximately parallel to each other, at least one end wall being provided with an entrance for crustaceans and fish, an opening formed in one of the longitudinally extending walls and being of sufficient dimension to permit removal of the catch through this opening, means for locating bait in at least one region of the trap, said region being accessible through said opening and being inaccessible to fish and crustaceans from outside the trap, ballast comprising two elogate bars which include ballast material, said bars being affixed to the trap at a side opposite the opening and extend substantially parallel to the end walls, one of said bars being near each of the two end walls, said bars extend through the interior of the trap, located against the inner surface of one of the longitudinally extending walls, with both ends of each bar projecting outwardly of the longitudinally extending walls whereby parts of the bars being located outwardly of the traps, said opening being adapted to receive a lid, a frusto conical cylinder removably fixed at its outer end in the opening, the cylinder extending into the trap with its large diameter end at the opening and the small diameter end being disposed within the trap, elogate bait slots formed in said cylinder and extending from its inner end and generally in an axial direction.

4,221,071

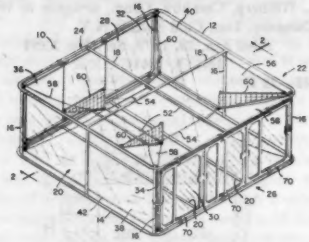
CRAB TRAP

Roger E. Sjolund, 1319 Maple Rd., Alderwood Manor, Wash. 98036

Filed Jan. 29, 1979, Ser. No. 7,304

Int. Cl.[3] A01K *69/08*

U.S. Cl. 43—100 **22 Claims**



1. In a crab trap of the type having an outline of a right prism formed by four lateral faces extending between first and second bases, said trap further including an opening formed along one of said lateral faces and terminating in an elongated rectangular entrance frame having two parallel elongated edges extending between two parallel shorter edges, said frame facing upwardly intermediate said bases with the longer edges of said entrance frame being generally parallel to said lateral face, said opening including a first panel extending inwardly from one edge of said lateral face adjacent said first base and terminating at the elongated edge of said entrance frame farthest from said lateral face, a second panel extending inwardly from one edge of said lateral face adjacent said second base and terminating at the elongated edge of said entrance frame closest to said lateral face, and a pair of third panels each extending inwardly from one lateral edge of said lateral face and terminating at a respective edge of said entrance frame whereby placement of said crab trap on said first base allows crabs to crawl up said first panel and into the interior of said trap through said entrance frame, the improvement comprising:

means for preventing crabs from escaping from said trap through an escape route by crawling along said third panels onto said second panel, and along said second panel to said entrance frame, said escape prevention means comprising a pair of baffles mounted between opposite edges of said entrance frame and spaced apart locations on said laterai face to block said escape route thereby preventing crabs from escaping from said trap.

4,221,072

TOY PRODUCING A DRIVER'S SECTION OF A VEHICLE

Andre Monin, rue Port d'Ouvey, Romans (Drome), France

Filed Dec. 12, 1978, Ser. No. 970,127

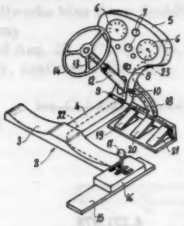
Claims priority, application France, Dec. 19, 1977, 77 39371

Int. Cl.[3] A63H *33/00*

U.S. Cl. 46—1 B **5 Claims**

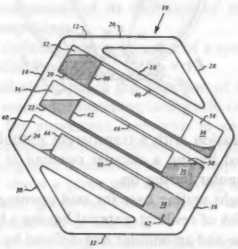
1. A toy simulating a driver section of a motor vehicle, comprising a support adapted to rest on the seat of a motor vehicle and be retained in position thereon by a child's thighs exerting pressure thereon to achieve fixing of the toy in its use position; and an upper extension projecting forwardly from said support and on which a steering wheel is mounted, said support being provided with lower extension projecting forwardly and downwardly mounting at least one foot pedal; a lateral extension for said support, said lateral extension mounting a gear shift lever, wherein said pedal simulates a clutch pedal and is connected by a cable to pin which, connected to

an elastic means, normally assures locking of gear shift lever, and a second pedal on said lower extension simulating an



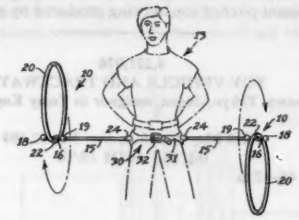
accelator pedal and being connected by a cable to the needle of a dial simulating a speedometer.

4,221,073
FLUID FLOW AND VISCOSITY DISPLAY TOY
Donna J. Malczewski, 64 Garden Rd., Cheektowaga, N.Y. 14225
Filed Jan. 17, 1979, Ser. No. 4,275
Int. Cl.[3] A63H *33/00*; G09B *23/06*; G01H *11/04*
U.S. Cl. 46—1 R **2 Claims**



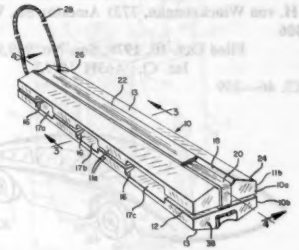
1. An amusement device of the character described, comprising;
(a) a housing comprising an open frame having a plurality of flat sides whereby said frame can be oriented on a surface in as many positions as there are sides,
(b) a plurality of partitions between a pair of opposite flat sides defining a plurality of rectangular cross-sectioned openings,
(c) a plurality of transparent chambers, having outer dimensions substantially corresponding to that of said openings, removably located in said openings,
(d) each of said chambers having a central through-opening of generally rectangular cross-section to thereby define opposed restricted channels between said through-opening and the walls thereof which are in contact with said partitions,
(e) said channels being in fluid communication with enlarged volume portions of said chambers at opposite ends thereof,
(f) a flowing material of different viscosities located in each of said chambers, and
(g) handle means formed by at least two of said flat sides to facilitate orientation of said housing in various positions on each of said flat sides such that the different flow rates of said material in each of said chambers can be controlled and observed as the same flows from one of said enlarged volume portions to the other through said opposed restricted channels.

4,221,074
HOOP TOY
Reymundo Gonzalez, 520 Hoefgen St., San Antonio, Tex. 78203
Filed Jul. 14, 1978, Ser. No. 924,742
Int. Cl.[2] A63H *1/32*; A63B *5/00*
U.S. Cl. 46—47 **8 Claims**



1. A hoop toy comprising:
(a) an elongated rod having first and second ends, a remote end portion adjacent said first end, and a controlled end portion adjacent said second end,
(b) first and second longitudinally spaced annular abutment members fixed on said rod and defining the extremities of said remote end portion, the transverse dimension of each of said abutment members being greater than the transverse dimension of said rod,
(c) a large twirling hoop having a diameter substantially greater than the transverse dimension of either of said abutment members,
(d) a coupling ring member loosely encircling simultaneously a portion of said hoop and said remote end portion between said abutment members,
(e) the diameter of said coupling ring member being small enough that the longitudinal movement of said ring member encircling said remote end portion and said hoop, along said remote end portion, is limited between said abutment members.

4,221,075
MULTIPLE PITCH ANIMAL CALL
H. Dan Gallagher, 902 SE. 119th Ave., Vancouver, Wash. 98664
Filed Sep. 5, 1978, Ser. No. 939,388
Int. Cl.[3] A63H *5/00*; G10D *7/00*
U.S. Cl. 46—178 **11 Claims**



1. A multiple pitch animal call comprising:
an elongated casing;
multiple airways of differing longitudinal widths spaced longitudinally apart along said casing, each airway extending from side-to-side through the casing from a mouthpiece opening on one side of the casing to an opposed sound-emitting opening on the opposite side of the casing; and
a vibratory elastic band extending longitudinally through

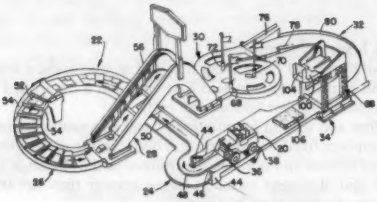
said casing, a portion of said elastic band being stretched across the width of each airway at a position intermediate said mouthpiece and sound-emitting openings so that air blown into one of the mouthpiece openings passes through its airway above and below the portion of elastic band stretched thereacross to vibrate said portion causing a sound to be emitted from the sound-emitting opening, a different pitched sound being produced by each airway.

4,221,076

TOY VEHICLE AND TRACKWAY

Shoji Ozawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan

Filed May 25, 1979, Ser. No. 42,494
Int. Cl.³ A63H *19/00*
U.S. Cl. 46—216 **18 Claims**



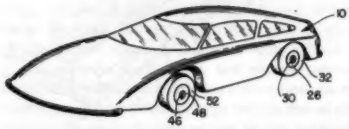
1. An amusement device comprising:
(a) a wheeled vehicle having at least rotatably driven rear wheels and rotatably driven gears extending laterally from said vehicle; and
(b) a trackway on which said vehicle moves including a first track section having at one end side ramps and teeth means positioned on said side ramps engageable with said rotatably driven gears of said vehicle for elevating the front end of said vehicle from said trackway into an upwardly extending position relative thereto, said vehicle being movably driven on said trackway by said rear wheels in the upwardly extended front-end position after leaving said side ramps and teeth means, and wherein said track section has at another end step means for imparting a change of movement to said vehicle to return the front end of said vehicle to a normal position on the trackway.

4,221,077

TOY RACING CAR

Emil H. von Winckelmann, 7731 Amestoy St., Van Nuys, Calif. 91406

Filed Oct. 10, 1978, Ser. No. 949,970
Int. Cl.³ A63H *18/12*
U.S. Cl. 46—259 **6 Claims**



1. A toy car and track combination, said track having a longitudinal slot therein for guiding the car along a selected lane thereof, said car including: a chassis, a drive motor mounted on the chassis; means for selectively coupling and decoupling the car to said track comprising a rod reciprocally movable to drop to a lower position in which the rod extends down into the slot and to be raised up to an upper position in which the rod is withdrawn from the slot; and a solenoid coil mounted on said chassis surrounding said rod to cause the rod to be withdrawn from the slot when the solenoid coil is energized thereby to cause the car to be decoupled from said longitudinal slot as the car is driven by the drive motor along the selected lane.

4,221,078

SEALED GLOBULAR DISPLAY DEVICE

John F. Latham, and Elaine L. Latham, both of 405 W. Franklin St., Baltimore, Md. 21201

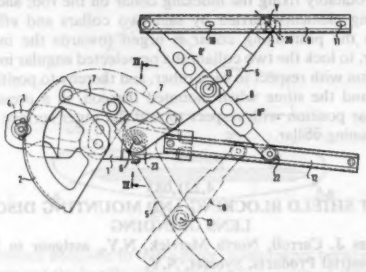
Filed Sep. 27, 1978, Ser. No. 946,407
Int. Cl.² A01G *5/04*; A47G *7/02*
U.S. Cl. 47—41 R **3 Claims**

1. In combination with a transparent globular display container for liquid having a circular opening at the bottom defined by an annular flaring lip,
(a) a fluid-tight sealing base for said opening comprising an integral disk of resilient material having a bottom supporting surface and an annular slot defined by spaced parallel cylindrical walls in the upper surface inwardly from the outer margin of said disk to form an outer annular flexible flange surrounding the periphery of said lip at said opening and spaced therefrom,
(b) a member at said upper surface defined by the inner cylindrical wall of said slot, said member being in fluid-tight sealing engagement along a substantial depth of said last-mentioned wall with the internal wall of said container at said opening, while said disk at the bottom of said slot is in fluid-tight sealing engagement with the outer extremity of said lip,
(c) said member having a recessed cylindrical socket at the center thereof, of substantial surface area of about half of that of the base,
(d) a cylindrical block of porous yieldable material for supporting a display within said container seated detachably within said socket,
(e) said member having opposed diametral rectangular slotted fluid passages bisecting said member between said slot and cylindrical socket to facilitate limited flexing of said annular flange in lateral directions to control finely the passage of air and/or liquid between the interior and exterior of said container, and
(f) an integral arcuate retaining projection extending inwardly from the top of each of the bisected portions of said member at the top of said socket, with each projection having an edge of reduced area for impaling the lateral surface of said block of porous material to enhance the retention therof within said socket.

4,221,079
WINDOW LIFTING ARRANGEMENT FOR A CURVED WINDOW PANE

Herbert Becker, Coburg-Neuses, Fed. Rep. of Germany, assignor to Metallwerke Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Aug. 22, 1978, Ser. No. 935,898
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739633
Int. Cl.[2] E05F *11/44*
U.S. Cl. 49—351 **8 Claims**



1. A window lifting arrangement for raising and lowering a window pane arcuate about an axis of curvature transverse to the principal component of its direction of movement, the arrangement comprising:

(a) a support defining axes x, y, and z of a system of rectangular coordinates;

(b) a guide rail elongated in the direction of the axis z;

(c) fastening means for fastening said guide rail to said window pane for movement therewith in an arc having a principal component in the direction of the axis y;

(d) an operating arm connected to said support for angular movement about a pivot axis and having a free end connected to said guide rail for movement of said free end with said guide rail in said arc,

(1) said pivot axis being inclined relative to a plane parallel to the axes x, z at a small acute angle β and at a small acute angel α relative to a plane parallel to the axes x, y; and

(e) drive means for moving said operating arm about said pivot axis.

4,221,080
WORK-TABLES OF GRINDING MACHINES

Paul Favrot, Gagny, France, assignor to Constructions de Clichy, France

Filed Nov. 17, 1978, Ser. No. 961,683
Claims priority, application France, Nov. 22, 1977, 77 34990
Int. Cl.[3] B24B *5/04*
U.S. Cl. 51—105 SP **3 Claims**

1. A grinding machine for finishing a workpiece, comprising

a frame,

a slide mounted to reciprocate on said frame, a grinding-wheel and means rotatably supporting said grinding-wheel for rotation relative to the slide,

a bed secured adjacent said frame and elongated crosswise to the movement of the slide,

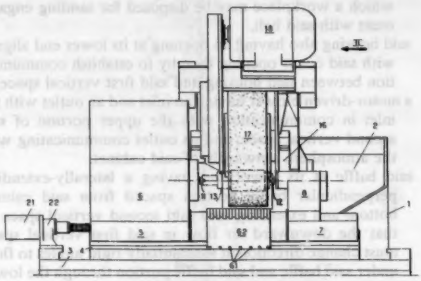
two separate work table components slidably mounted on said bed, a headstock and a tailstock respectively supported on the work table components, and centers mounted in said headstock and tailstock respectively adapted to support opposite ends of the workpiece,

two jack cylinders respectively fixed rigidly to said two work table components in coaxial relation along said bed,

two jack pistons respectively mounted operatively in said two jack cylinders and common rod means rigidly connecting said two jack pistons together,

spring means inserted between one end of said rod means and the jack cylinder fixed to the tailstock carrying work table component operable for resiliently urging the tailstock carrying work table component towards the headstock carrying work table component to bottom the centers against the workpiece for holding the workpiece,

adjustable means connecting the other end of said rod means



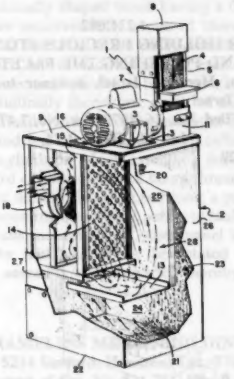
to said bed operable upon actuation for simultaneously shifting said headstock and said tailstock and the workpiece carried thereby in bulk in the same direction axially along the bed, and

said two jack cylinders and jack pistons forming two jacks and means selectively operable to power the jacks effective to shift said headstock and said tailstock in opposite directions, either toward one another or away from one another for effectively loading and unloading the workpiece relative to the centers.

4,221,081
DUST COLLECTOR SYSTEM FOR BELT SANDER

Charles T. Everett, P.O. Box 2068, Warren, Ohio 44484

Filed Aug. 28, 1978, Ser. No. 937,603
Int. Cl.[3] B24B *21/00*
U.S. Cl. 51—135 R **4 Claims**



1. A belt sander and dust-collector assembly comprising:

an upright pedestal formed as an enclosing cabinet of generally rectangular cross-section and having pairs of opposed side walls, a bottom, and a top cover,

a generally vertically disposed baffle within said cabinet extending between a pair of said opposed side walls thereof to divide the cabinet interior into first and second

vertical spaces, said baffle extending from the top of said cabinet to a point vertically spaced from the bottom thereof so that said vertical spaces are in communication at lower ends thereof,

said top cover having an opening therethrough communicating with said first vertical space,

an enclosing housing attached to said top cover and extending vertically upwardly therefrom and having an endless pulley-driven sanding belt operably mounted therein to provide a generally vertical working surface,

said housing having a opening in a wall thereof through which a workpiece may be disposed for sanding engagement with said belt,

said housing also having an opening at its lower end aligned with said cover opening thereby to establish communication between said housing and said first vertical space,

a motor-driven blower having an inlet and an outlet with the inlet in communication with the upper portion of said second vertical space, and its outlet communicating with the atmosphere outwardly of said cabinet,

said baffle at its lower end having a laterally-extending perpendicular baffle portion spaced from said cabinet bottom and extending into said second vertical space so that the downward air flow in said first vertical space must change direction at substantially right angles to flow under said baffle and said baffle portion through the lower end of said second vertical space and then again change flow direction in passing upwardly in said second vertical space toward said blower inlet,

vertically extending guides disposed adjacent said blower inlet in said second vertical space extending from points above said perpendicular baffle portion toward the top of said cabinet,

a filter element slidably mounted in said guides for ready insertion and removal therefrom thereby to dispose said filter element substantially perpendicular to said laterally-extending baffle portion and in said air flow when said blower is operating,

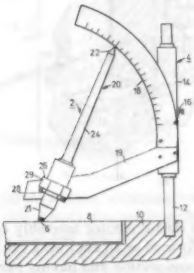
whereby with said blower in operation, reduced air pressure in said vertical spaces draws sandings downwardly in a tortuous path from said housing into said cabinet through said openings, around said baffle and up through said filter element and into said blower thereby to cause heavier sanding particles to fall to the bottom of said cabinet and only light and fine particles arrive at said filter element.

4,221,082

DEVICE FOR HOLDING PRECIOUS STONES DURING CUTTING AND POLISHING THE FACETS THEREOF

Ilan Weissman, Herzelia, Israel, assignor to Hargem Ltd., Ramat Gan, Israel

Filed Jan. 26, 1979, Ser. No. 7,478
Int. Cl.³ B24B *9/16*
U.S. Cl. 51—229 **8 Claims**



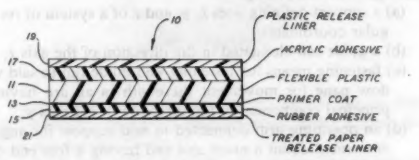
1. A device for holding precious stones during cutting and polishing the facets thereof, comprising: a rod having a mounting tip at one end for mounting the stone, and a conical outer surface located adjacent to said mounting tip and tapered inwardly towards the opposite tip of the rod; a positioning collar loosely received on the rod so as to be movable both axially and rotatably thereon, and including a flat outer surface adapted to be pressed against a locating surface of an aligning fixture for positioning the stone, when mounted on the rod, with respect to a cutting or polishing disc; an indexing collar including a plurality of indexing positions received on the rod between its conical surface and said positioning collar; a spring urging the positioning collar towards the indexing collar, and the indexing collar against said conical surface of the rod for non-rotatably fixing the indexing collar on the rod; and interlocking elements carried by said two collars and effective, when the positioning collar is urged towards the indexing collar, to lock the two collars at a preselected angular indexing position with respect to each other, and thereby to position the rod, and the stone when mounted thereon, in a preselected angular position with respect to said flat outer surface of the positioning collar.

4,221,083

HEAT SHIELD BLOCKING AND MOUNTING DISC FOR LENS GRINDING

Thomas J. Carroll, North Merrick, N.Y., assignor to Valley Industrial Products, Syosset, N.Y.

Continuation of Ser. No. 729,427, Oct. 4, 1976, abandoned. This application Jan. 3, 1978, Ser. No. 866,782
Int. Cl.² B24B *1/00*
U.S. Cl. 51—284 R **4 Claims**



1. A method of making a lens from a lens blank comprising:

(a) mounting a transparent flexible plastic mounting disc and heat shield having transparent adhesive on both sides thereof onto the lens blank;

(b) placing said lens blank with said plastic disc thereon on a lens block with a space therebetween;

(c) attaching said lens blank with said disc thereon to said lens block by supplying an alloy to the space therebetween;

(d) carrying out grinding, fining and polishing operations on said lens block to form the lens; and

(e) deblocking said lens.

4,221,084

ABRASIVE TOOL

John J. Frantzen, White Bear Lake, Minn., assignor to Minnesota Micro Metal, Inc., St. Paul, Minn.

Filed Sep. 18, 1978, Ser. No. 943,114
Int. Cl.³ B24D *15/02*
U.S. Cl. 51—392 **1 Claim**

1. An abrading tool adapted to hold etched metal abrasive material and also sandpaper, as desired, comprising in combination:

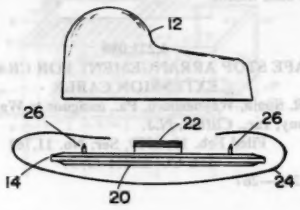
a base portion having a top surface and a generally flat bottom pressure face with a recessed groove on the bottom face about the perimeter thereof;

metal abrasive material affixed to said pressure face with the edges of the metal abrasive material bent into said perimeter groove;

at least two springable catch members extending generally

perpendicular from said base portion, from the top surface opposite said pressure face, said catches having protuberances thereon which protuberances extend outwardly toward the nearest edge of said base portion;

a handle portion adapted on the outside surface for convenient gripping and having an inside surface with at least two alternate position protuberances thereon which extend inwardly to engage the base mounted springable catch protuberances in first and second alternate positions, the first position being generally with the handle close to the base for using the metal abrasive and the second position being with the handle separated from the base by a



distance adequate to trap a piece of sandpaper between the base and the handle when sandpaper is wrapped about the base portion, said handle having a hump at one end to engage the palm of the users hand and a recess at the other end to accept the users fingers, said handle also having outside dimensions smaller than the base portion so that a portion of the base portion extends outward beyond the handle to form a protective ledge for the users fingers;

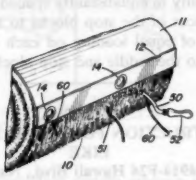
said tool further including a plurality of generally pointed pins extending from said top surface so as to penetrate and secure said sandpaper wrapped about said base and further including holes in said handle positioned to receive said pins when the handle is affixed to the base.

4,221,085

COVER FOR STORED BULK MATERIAL

Bill F. Conaghan, 307 N. 7th, Tonkawa, Okla. 74653

Filed Sep. 11, 1978, Ser. No. 941,218
Int. Cl. E04D *1/34*
U.S. Cl. 52—4 **5 Claims**



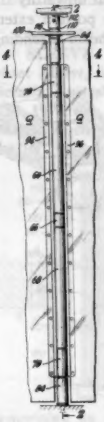
1. Apparatus for covering a cylindrically shaped bale of bulk material stored on the surface of the earth which is positioned with its axis substantially parallel with said surface of the earth comprising a water repellent cover means of sufficient length and width to cover all of the length of said cylindrical bale and more than 50% of its circumference, each terminus of the width of said cover having a plurality of openings therethrough, a twine means inserted into said bale of bulk material below each of said plurality of openings and passing through said openings and tied to secure said cover tightly to said bale whereby water falling on said cover will follow said cover to said terminus and drop onto said surface of said earth away from the portion of said bale of bulk material in contact with said surface of the earth thereby reducing the tendency to rot the bale.

4,221,086

BANKING PROTECTION SYSTEM FOR 24 HOUR BANKING

James S. Berman, New York, N.Y., assignor to Citibank, N.A., New York, N.Y.

Division of Ser. No. 875,915, Feb. 7, 1978. This application Sep. 18, 1978, Ser. No. 943,219
Int. Cl.² E04B *1/346*
U.S. Cl. 52—65 **3 Claims**



1. An adjustable pole and moveable panel assembly for erection between a pair of parallel surfaces comprising: a longitudinally extending intermediate section having an externally threaded portion at each end thereof; means at each end of said intermediate section for attaching the intermediate section to a pair of parallel surfaces, each mounting means including a rotatable and longitudinally moveable tubular portion having a threaded interior at one end, said tubular portion being threadably engaged with said intermediate section threaded portions, whereby the length of said assembly may be adjusted by rotating said mounting means relative to said intermediate section; said intermediate section being comprised of a centrally located first cylindrically shaped block having a first, rotatable, cylindrical sleeve concentrically mounted thereon, a pair of second cylindrical sleeves concentrically attached to said central block, on each side of said first sleeve, each of said second sleeves having a second cylindrical block attached thereto and extending longitudinally therefrom; a pair of third cylindrical sleeves concentrically and rotatably mounted on said associated second cylindrical block; each of third cylindrical sleeves having a third cylindrical block extending from the free end thereof, said third cylindrical block being threaded to provide said intermediate section threaded portions; a pair of partition panels, means mounting one of said panels to said first and third sleeves and means mounting the other panel to said second sleeves, whereby said panels may be rotated independently about said pole assembly and supported thereby.

4,221,087

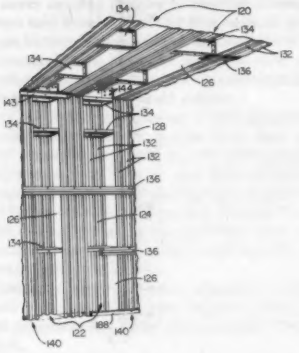
FRAMELESS METAL BUILDING

Colin F. Lowe, 5214 Sanford, Houston, Tex. 77035

Continuation-in-part of Ser. No. 831,781, Sep. 9, 1977, Pat. No. 4,106,245. This application Aug. 7, 1978, Ser. No. 931,854
Int. Cl.² E04B *7/02*
U.S. Cl. 52—90 **15 Claims**

1. A building comprising a plurality of generally rectangular roof panels, said roof panels being formed by bent sheets of metal and including substantially flat inner skin portions connected to substantially flat outer skin portions by substantially flat side wall portions to form longitudinally extending and

parallel spaced primary corrugations, said inner and outer skin portions having longitudinally extending secondary corrugations being substantially smaller than said primary corrugations, a series of longitudinally spaced spacer members disposed within each said primary corrugation and secured to the corresponding said side wall portions, means forming spaced opposite side walls for said building, said roof panels being secured together in adjacent relation to form a roof assembly extending between said opposite side walls, the assembled said roof panels being inclined upwardly from said side walls and defining a peaked ridge portion extending parallel between said side walls, a ridge beam extending longitudinally of the



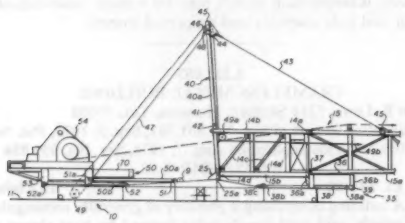
building generally between opposing said roof panels positioned on opposite sides of said ridge portion, said ridge beam including means rigidly connecting said inner skin portions of said roof panels along said ridge portion and being effective to transfer tension forces laterally across the lower part of said ridge portion, said ridge beam also including means rigidly connecting said outer skin portions of said roof panels along said ridge portion and effective to transfer compressive forces laterally across the upper part of said ridge portion, and means for rigidly connecting said roof panels to said side walls for transferring loads from said roof panels through said wide walls to a base supporting said side walls.

4,221,088

LOW LIFT, ELEVATABLE HIGH FLOOR DRILLING MAST AND SUBSTRUCTURE ARRANGEMENT THEREFOR

Bradley C. Patterson, Spring, Tex., assignor to PRE Corporation Mfg. Co., Houston, Tex.

Filed Jan. 2, 1979, Ser. No. 441
Int. Cl.[2] E04N *12/34*
U.S. Cl. 52—116 **13 Claims**



1. A low lift, high floor drilling mast and substructure arrangement therefor comprising:

a. base means for resting on the earth's surface;

b. drilling mast support means pivotally connected to said base means;

c. setback tower means pivotally connected to said drilling mast support means and to said base means;

d. elevatable drawworks support means pivotally mounted on said base means;

e. drilling mast means secured to said mast support means; and

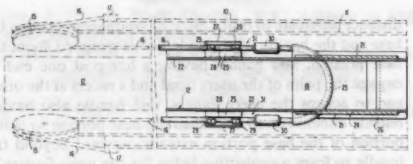
f. lifting frame means connected to said drilling mast support means whereby said drilling mast means, support means therefor and setback tower means may be simultaneously elevated from a reclined position to an upright position on said base means.

4,221,089

FAIL-SAFE STOP ARRANGEMENT FOR CRANE BOOM EXTENSION CABLE

Stanley R. Spain, Waynesboro, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Feb. 12, 1979, Ser. No. 11,761
Int. Cl.[2] E04H *12/34*
U.S. Cl. 212—267 **9 Claims**



1. In a multi-section telescoping crane boom having a fly section and a load bearing extension cable for said fly section, a fixed saddle on said fly section near the interior end thereof and having an arcuate seat, and said extension cable being slidably engaged in said seat and extending in two branches from the seat along opposite sides of the fly section exteriorly thereof, the improvement comprising a pair of safety stop blocks fixed to the opposite sides of said fly section in spaced relationship to said saddle and having guide passages for the two branches of said cable and slidably receiving said branches, and a pair of safety stop elements fixed securely on said cable in the region between said saddle and stop blocks and being normally in equidistantly spaced relationship to the opposing end faces of the stop blocks to allow said cable to seek a position of equal loading on each of its branches by sliding relative to the saddle and stop blocks.

4,221,090

STILT CONSTRUCTION FOR DWELLINGS AND THE LIKE

Robert A. Pahl, 4914-F24 Hawaii Blvd., Naples, Fla. 33942

Filed Oct. 16, 1978, Ser. No. 951,479
Int. Cl.[2] E02D *27/16*; E04D *1/34*
U.S. Cl. 52—169.9 **10 Claims**

1. Stilt construction of dwellings and the like, comprising

a core structure, including

a horizontal reinforced earth-level core slab, and

four or more core piles extending from within the earth to above said core slab arranged in a rectangular pattern, said piles having moment-resisting connection means to said slab to restrain said core piles perpendicular to said slab, said piles extending upwardly to and supporting

a horizontal beam structure elevated above said slab and having an outstanding portion extending outwardly from said core structure, together with

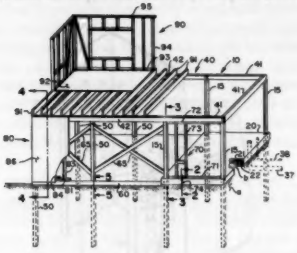
a plurality of remote piles in the earth remote from said core slab, their upper ends joined to and providing vertical support for said outstanding portion of said beam struc-

ture, said beam structure restraining the upper ends of said remote piles from transverse movement,

upper walls supported upon said beam structure and extending to a roof thereabove,

lower walls depending from said outstanding portion of said beam structure and terminating in a lower sill member,

means to suspend said lower walls from said beam structure regardless of support beneath said sill member, together with



an earth-supported slab beneath a said outstanding portion of said beam structure ending outwardly beneath said lower wall lower sill member, and

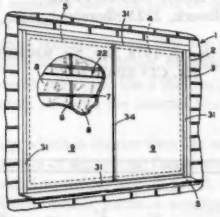
means to permit downward movement of said earth-supported slab from said lower sill member while restraining said sill member and lower wall thereabove from transverse movement.

4,221,091

WINDOW INSULATION SYSTEM

Robert G. Ganse, Lancaster, and Harold W. Nikolaus, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 16, 1979, Ser. No. 3,921
Int. Cl.[2] E06B *3/26*
U.S. Cl. 52—202 **13 Claims**



1. In a window insulation system wherein insulation panels are mounted adjacent windows in wall openings in a building, said windows including frame, sash, and mullion members and muntins in said sash defining shaped openings having window panes therein, the combination of

(a) bracket mounting means on said windows on the building interior side thereof;

(b) bracket means mounted on said bracket mounting means and extending a predetermined distance therefrom in a direction toward the interior of the building to establish the desired spacing away from the window sash of the insulation panels when they are mounted thereon;

(c) panel support assembly members mounted on said bracket means, and including at least some support members positioned to extend along and between adjacent edges of the insulation panels when they are mounted on the support assembly;

(d) insulation panels mounted on said panel support assembly members;

(e) molding on said insulation panels' edges which are adjacent the peripheral surfaces of the wall opening; and

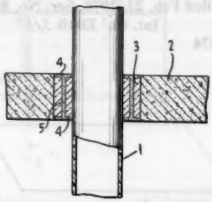
(f) decorative means positioned along and extending between adjacent edges of the panels on the side thereof facing the interior of the building, said decorative means being removably secured to said panel support assembly to hold the panels thereon and cover the adjacent edges thereof.

4,221,092

SLEEVE

William L. Johnson, Mont Albert, Australia, assignor to ICI Australia Limited, Victoria, Australia

Filed Oct. 19, 1976, Ser. No. 733,852
Claims priority, application Australia, Nov. 4, 1975, PC3837
Int. Cl.[2] E04C *3/20*; E04H *9/00*
U.S. Cl. 52—232 **6 Claims**



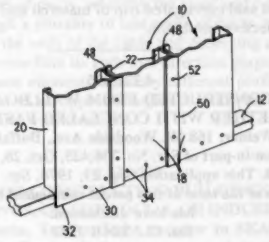
1. A fire barrier comprising an intumescent composition packed into the space between a thermoplastic pipe and an access hole or duct in a wall or floor through which the thermoplastic pipe is laid, said intumescent composition being characterised in that it will expand on heating to temperatures at which the thermoplastic pipe melts or burns, to form a fire resistant mass, said intumescent compound being present in sufficient amounts such that in its expanded state it will completely fill the access hole or duct which remains after the thermoplastic pipe has melted away or burned away.

4,221,093

SHEET METAL WALL MODULE AND WALL FORMED THEREWITH

Joseph A. Crookston, 5712 N. 24 St., Kalamazoo, Mich. 49004

Filed Feb. 12, 1979, Ser. No. 11,138
Int. Cl.[3] E04B *5/52*
U.S. Cl. 52—269 **9 Claims**



1. A vertically elongated load bearing wall module of thin sheet metal and comprising as integral parts:

a vertically elongated center panel having an upper edge, a lower edge, and vertically elongated opposite side edges, and substantially parallel vertically elongated side flanges extending in the same direction from said opposite side edges of said panel;

vertically elongated return flanges extending toward each

other from the free side edges of said side flanges and end flanges extending toward each other from the upper and lower ends of said side flanges, said return flanges and end flanges and center panel together completing the peripheral wall of each of a pair of boxes which open toward each other across the width of said center panel, said side flanges respectively forming the bottoms of said boxes; and

tabs extending inwardly from the ends of said return flanges toward said center panel in lapped relation with said end flanges;

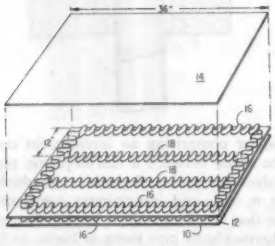
said center panel having nailing strips coplanar therewith and projecting vertically beyond said end flanges at each end of the panel, said return flanges being spaced behind the plane of said nailing strips.

4,221,094

REFLECTIVE INSULATION ASSEMBLY

Bradley R. Murdock, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

Filed Feb. 22, 1978, Ser. No. 880,259
Int. Cl.[2] E04B *5/57*
U.S. Cl. 52—474 **9 Claims**



1. A reflective insulation assembly intended to be mounted on a body to be insulating comprising:

a first sheet of reflective insulation;

a second sheet of reflective insulation; and

a corrugated strip of material mounted on its edge between said first and said second sheet of reflective insulation along the entire perimeter of said first and second sheets of reflective insulation to thereby space said first and second sheets of reflective insulation and enclose a sealed volume of space between said first and said second sheets of reflective insulation and secured to said first sheet of reflective insulation;

means retaining said second sheet of reflective insulation against said corrugated trip of material and said first sheet of reflective insulation.

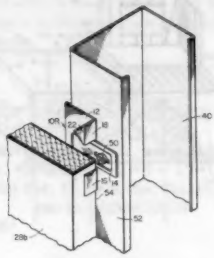
4,221,095

WALL CONSTRUCTED FROM WALLBOARD HELD TOGETHER WITH CONCEALED FASTENERS

Roger N. Weinar, 168 W. Woodside Ave., Buffalo, N.Y. 14220

Continuation-in-part of Ser. No. 736,425, Oct. 28, 1976, Pat. No. 4,117,644. This application Sep. 29, 1978, Ser. No. 947,078
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] E04B *5/52*
U.S. Cl. 52—489 **13 Claims**

1. A wall or partition comprising first and second coplanar edge-abutting wallboard panels, invisibly secured together along a joinder line at a wall framing member by a first series of a plurality of spaced apart fasteners joined to the first wallboard panel at the abutting edge thereof and held to the framing member, a second series of spaced apart fasteners joined to the second wallboard panel along the abutting edge thereof and with parts of the fasteners extending parallel to said panel from the back side thereof, said second series of fasteners being so located as to avoid contact with said first series of fasteners and said extending parts of said second series of fasteners when the wallboard panels are in coplanar edge-abutting relationship, contacting the back side of the first panel and, in conjunction with the framing member, preventing said second panel from moving away from said framing member in a direction having a component at right angles to the plane of the panels, which wallboard fasteners are each of a single piece of sheet metal having a substantially flat plate portion, a tongue portion extending from the plate portion and coplanar therewith, a pair



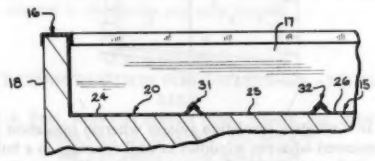
of web portions, one on each side of the tongue portion and each extending at a right angle from said plate portion and an impaling flange portion extending from each web portion in the same direction, essentially parallel to and overlying said plate portion and opposite to the direction in which the tongue extends, so that the plate portion may contact the surface of the wallboard panel while the impaling flange portion is impaling said panel at an edge thereof, with said fasteners including a walled depressed area in the plate and tongue portions with a longitudinal slot in the tongue portion, which depression extends in a direction opposite to that in which the webs extend.

4,221,096

ROOF STRUCTURE

Anthony M. Viertlboeck, 2323 Shoreland, Apt. A112, Toledo, Ohio 43611

Filed Sep. 5, 1978, Ser. No. 939,413
Int. Cl.[2] E04D *1/00*
U.S. Cl. 52—553 **9 Claims**



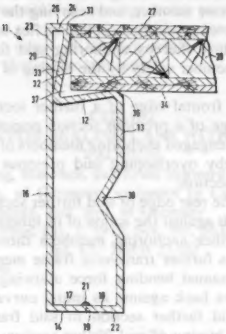
1. A joint construction for adjacent edges of sheets of flexible waterproof roofing material in a roof structure, comprising an inverted generally V-shaped channel having first and second sides joined at an apex extending above the normal maximum water level on said roof structure, waterproof means bonding an adjacent edge of one sheet of said flexible waterproof roofing material to one side of said V-shaped channel, waterproof means bonding an adjacent edge of said other sheet to the other side of said channel, said adjacent edges of said sheets being bonded to said sides of said channel so that said edges are above the normal maximum water line on said roof, and means for preventing water from entering the joints between said edges of said channel.

4,221,097

STEEL SECTIONS FOR FRAMEWORK PANELS

Gerhard Dingler, Ortsstrasse 1, 7274 Haiterbach, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,798
Int. Cl.[2] E04C *3/30*
U.S. Cl. 52—731 5 Claims



1. In a steel section for the framing and stiffening of formwork panels which serve for the shuttering of concrete masses, comprising

a protuberance which rests on the outer circumferential surface of the formwork panel,

a first flange which forms a continuation of the protuberance and rests against a marginal zone of the inner side of the formwork panel,

a second flange which is longer than the first flange, forms a continuation of the first flange, extends perpendicularly to the formwork panel and has a shallow, V-shaped indentation pointing towards the internal space of the steel section,

a third flange which is shorter than the second flange, forms a continuation of the second flange and extends outwards lying parallel to the formwork panel, and

a fourth flange which forms a continuation of the third flange, the improvement comprising

the third flange consists of two part-flanges which are butt-welded to one another at their end faces by a continuous seam,

the part of the seam protruding beyond the outer surface of the third flange is machine-flush,

the fourth flange continues to the protuberance,

the protuberance comprises three walls of which

the first wall forms the direct, straight continuation of the fourth flange

the second wall extends perpendicularly to the first wall and is substantially shorter than it, extends parallel with the plane of the formwork panel and forms the continuation of the first wall,

the third wall is bent back to the first wall at an acute angle, and

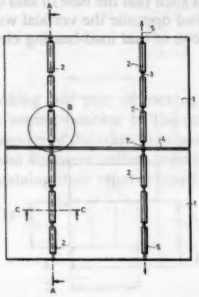
the corner zone between the first flange and the third wall includes an angle smaller than 90°.

4,221,098

PROCESS FOR MAKING A LARGE POST-TENSIONED FLOOR BAY CONSISTING OF A NUMBER OF PREFABRICATED REINFORCED-CONCRETE FLOOR ELEMENTS

György Mayer, and László Neméskeri, both of Pécs, Hungary, assignors to Baranya Megyei Allami Epitoipari Vallalat, Pécs, Hungary

Division of Ser. No. 801,366, May 27, 1977. This application Mar. 14, 1978, Ser. No. 886,590
Int. Cl.[2] B21D *39/00;* E04C *3/29*
U.S. Cl. 52—741 1 Claim



1. Process for the construction of a reinforced concrete floor, comprising assembling a plurality of prefabricated concrete floor elements in edge-to-edge coplanar relationship with a plurality of said elements in a common plane in each orthogonal direction, each said element having a duct formed in the concrete thereof which extends substantially full length of the element parallel to but spaced between the sides of the element and which is at least upwardly open, at least one of said elements having a plurality of said ducts therein at right angles to each other thereby to form in the assembly of elements a plurality of series of aligned ducts with at least two of said series intercepting each other at right angles, each element having at least one integral rib bridging said duct, each said series extending entirely across said floor, each rib having a hole extending horizontally therethrough, each duct communicating at at least one end thereof with at least one duct of at least one adjacent said element, feeding a cable through said ducts and through said holes through said bridges with the cable passing entirely through one said series of ducts at right angles to said one series of ducts, then passing the same said cable through another said series of ducts, whereby the same said cable extends entirely through a plurality of said series of ducts, and thereafter anchoring the ends of the cable and deflecting a portion of said cable intermediate its ends in a direction perpendicular to the plane of said elements whereby different portions of said cable are inclined at opposite angles to said plane, and then filling said ducts with concrete.

4,221,099

PROCESS FOR CONSTRUCTING BUILDINGS FOR USE AS DWELLINGS, OR FOR SOCIAL OR INDUSTRIAL USE

Umberto Caserta, Treviso, Italy, assignor to SKAUT Prefabbricati S.r.l., Treviso, Italy

Filed Mar. 8, 1978, Ser. No. 884,542
Claims priority, application Italy, Mar. 18, 1977, 3373 A/77
Int. Cl.[2] E04B *1/348*
U.S. Cl. 52—745 5 Claims

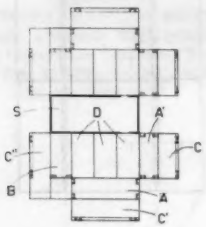
1. A process for the production of a building of more than one storey using prefabricated, transportable, U-shaped, tridimensional load-bearing elements, and prefabricated, transportable, essentially angle-shaped, tridimensional complementary elements, each of said load bearing elements comprising a

rectangular base and two vertical walls, one at each of the two short sides of the base, each wall being constituted at least by two pillars placed closed to the base vertices, each pillar being provided over the entire length thereof with an open channel extending also through the full thickness of the base, and each of said complementary elements having a rectangular base and, at only one side thereof, a vertical wall constituted at least by two pillars, the process comprising the steps of:

preparing foundations in situ;

positioning at least one of said prefabricated load-bearing elements so that at least the extremities of the base thereof rest on the foundations;

positioning at least one of said complementary elements on said foundations such that the base of said complementary element at the end opposite the vertical wall thereof rests on the base of one of said load-bearing elements;



for each additional storey of the building, positioning one of said load-bearing elements directly above each of said load-bearing elements of the first storey such that the channels in the pillars thereof interconnect, and positioning one of said complementary elements on each said complementary element of the storey below such that the base of each said complementary element of each storey, at the end opposite the vertical wall thereof, rests on the base of one of said load-bearing elements of the same storey;

pouring cement into the inside of the channels in said pillars, thereby binding said support elements vertically to one another; and

fitting a roof to the vertical walls of the uppermost storey.

4,221,100

METHOD FOR ERECTING AN EASILY ERECTABLE AND DISMOUNTABLE BUILDING

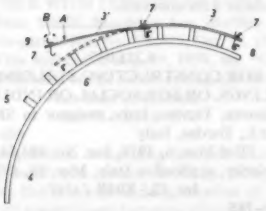
Leif Lindblad, Uddevalla, Sweden, assignor to Lief Lindblad Entreprenend AB, Uddevalla, Sweden

Division of Ser. No. 795,546, May 10, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,863

Claims priority, application Sweden, May 14, 1976, 7605495

Int. Cl.[2] E04G *21/00*; E04B *1/32*

U.S. Cl. 52—748 **6 Claims**



1. A method for erecting a building comprising arch-form members, parallel transverse frame members connected to said arch-form members, thin-walled sections overlapping each other over said transverse frame members and said arch-form members, and anchoring members anchoring said sections to said transverse frame members, each said section having an initial curvature, corners, a frontal edge, and a rear edge; comprising the steps of:

(a) providing each said sections with apertures near each of its corners, the apertures near the frontal edge being slots extending to the frontal edge;

(b) anchoring one edge of a first section to a first transverse frame member by engaging anchoring members through said apertures to said first transverse frame member;

(c) anchoring another edge of said first section to a second transverse frame member by manually bending it against the action of its inherent resiliency, engaging further anchoring members through apertures to said second transverse frame member, and relieving the manual bending force allowing said first section to flex back against its initial curvature thereby anchoring said first section to said frame member solely by the biasing of said first section;

(d) sliding the frontal edge of a further section under an anchored edge of a previous section engaging said slots with already engaged anchoring members of said previous section thereby overlapping said previous section over said further section;

(e) anchoring the rear edge of said further section by manually bending it against the action of its inherent resiliency, engaging further anchoring members through the rear apertures to a further transverse frame member, and relieving the manual bending force allowing said further section to flex back against its initial curvature thereby anchoring said further section to said frame members solely by the biasing of said further section; and

(f) repeating steps d and e.

4,221,101

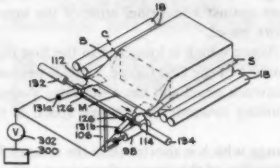
APPARATUS FOR EVACUATING AND SEALING BAGS

Quentin T. Woods, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 12, 1979, Ser. No. 11,453

Int. Cl.[3] B65B *31/06*

U.S. Cl. 53—79 **4 Claims**



1. In combination with a device for forming a seal across the mouth of a flexible bag, an apparatus for flattening the mouth of the bag and for providing fluid communication with the interior of the bag while the bag mouth is in a flattened condition, said apparatus comprising:

a pair of nozzle members, at least one of the nozzle members having a passageway formed therethrough for providing fluid communication with the interior of the bag, and

each of said nozzle members including a tubular portion and a flattened head portion extending from said tubular portion;

first moving means resiliently mounted to said nozzle members for moving said nozzle members toward and away from each other in a selected plane, said first moving means including a gasket received on the tubular portions of each of the nozzle members and a pair of adjustable clamp means for engaging each of said gaskets, track means, a pair of block members slidably received on said track means with each of said clamp means being respectively secured to one of said block members, and means

for driving said block members toward or away from each other on said track means;

means for supporting a flexible bag having an article therein in an orientation such that the plane in which said nozzle members are movable intersects the mouth of the bag; and

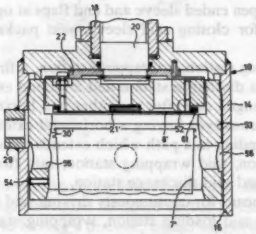
second moving means cooperating with said first moving means for inserting said nozzle members into said bag mouth and thereafter withdrawing said nozzle members from said mouth whereby said nozzle members may be first inserted into said bag mouth, then moved to engage opposite edges of the bag mouth and to flatten the bag to permit the bag to be evacuated or gas-purged or both evacuated and gas-purged, and finally withdrawn from the bag mouth, said resilient mounting of said nozzle members to said first moving means permitting said portions of the nozzle members that engage the bag to slide against the edges of the bag while continuing to apply tension to flatten the bag mouth.

4,221,102

APPARATUS FOR SEALING CANS WITH LIDS UNDER VACUUM

Hans-Jörg Lang, Biberach, and Ernst Schwerdtel, Munich, both of Fed. Rep. of Germany, assignors to Ludwig Schwerdtel GmbH, Karlsfeld, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 55,037
Int. Cl.³ B65B *31/02*
U.S. Cl. 53—96 **5 Claims**



1. In an apparatus for sealing a can having a lid, under vacuum, including a vacuum station comprising a plate on which the can may be received, a stationary, evacuable bell, lifting means for lifting said plate, from below, against said bell, and lid lifting means for lifting the lid from the can, the improvement wherein said lid lifting means comprises an adjustment cylinder and an adjustment piston capable of being subjected to pressure medium and guided in said adjustment cylinder, and wherein the apparatus further includes reduction elements capable of being applied to said adjustment piston and to the inner wall of said bell, thereby permitting sealing of cans of varying sizes.

4,221,103

PACKAGING PAPER CUTTING MECHANISM FOR COIN PACKAGING MACHINE

Isamu Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 961,918
Int. Cl.² B65B *11/04*
U.S. Cl. 53—212 **7 Claims**

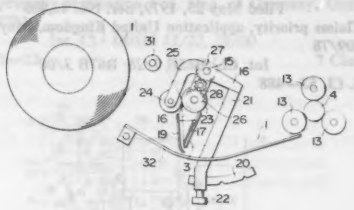
1. A packaging paper cutting mechanism for use with a coin packaging machine, and having a cutter setting position which is adaptable based on the diameter of coins to be packaged, comprising:

a pair of rocking members positioned apart from each other,

a cutter mounted on said rocking members and having a setting position,

a drive roller rotatably mounted on said rocking members,

a follower roller mounted on said rocking members and operatively associated with said drive roller so as to cooperate therewith to feed the packaging paper between said drive roller and said following roller, and



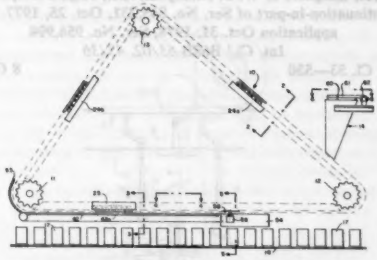
means for rocking said pair of rocking members so as to change the setting position of the cutter in accordance with the diameter of the coins to be packaged and to move the drive and followes rollers together with the cutter while maintaining their relative position the same.

4,221,104

FRUIT PROCESSING APPARATUS AND METHOD

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Dec. 18, 1978, Ser. No. 970,323
Int. Cl.³ B65B *63/00*; A21C *15/04*
U.S. Cl. 53—435 **14 Claims**

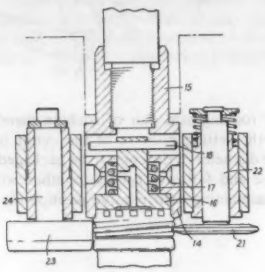


9. A fruit processing method for producing and delivering a predetermined count of cherry halves to containers, the method making use of a conveyer having flight units for progressing pitted cherries through orienting and slicing regions, the steps of introducing a predetermined number of whole pitted cherries into upright holes provided in the conveyer flight units, orienting the cherries within the holes as they progress through the orienting region by causing them to spin about their axis while within the openings and while being progressed through the orienting zone, discontinuing such spinning of the cherries as they progress into the slicing region, slicing of the cherries as they progress through the slicing region into upper and lower halves, and then causing a predetermined number of the cherry halves to be delivered into containers.

4,221,105
METHOD AND APPARATUS FOR APPLYING CLOSURES TO CONTAINERS

John H. Guest, Sutton Coldfield, United Kingdom, assignor to Metal Closures Limited, United Kingdom

Filed May 25, 1979, Ser. No. 42,408
Claims priority, application United Kingdom, May 31, 1978, 25109/78
Int. Cl.[3] B65B 7/28; B67B 3/08
U.S. Cl. 53—488 7 Claims

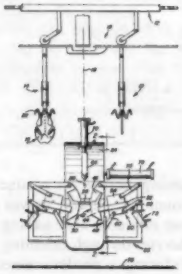


1. A method of applying an unthreaded metal closure to a container having an externally threaded neck which method comprises placing the unthreaded closure over the mouth of the container, pressing the closure down against the mouth of the container and, whilst so held, forming thread in the closure skirt by means of two or more profiled thread rollers characterised in that during the thread rollng operation the portion of the closure skirt in which the thread is formed is engaged by at least open plain roll angularly displaced in relation to the thread rolls.

4,221,106
TIGHT BAGGING SYSTEM FOR POULTRY

William F. Altenpohl, and Paul J. Altenpohl, both of High Point, N.C., assignors to W. F. Altenpohl, Inc., High Point, N.C.

Continuation-in-part of Ser. No. 845,231, Oct. 25, 1977. This application Oct. 31, 1978, Ser. No. 956,994
Int. Cl.[3] B65B 63/02, 43/36
U.S. Cl. 53—530 8 Claims

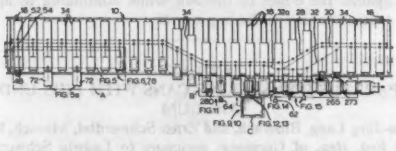


1. In combination with a moving conveyor from which a single irregular-shaped, compressible object is dropped at a packaging station for guided gravitational descent along an entry passage extending into a single inflated bag made of stretchable material, movable nozzle means projected into the bag in response to release of the object from the conveyor for establishing said entry passage into the bag, and ram means engageable with the object only following partial entry thereof through said entry passage for packing the object into the bag.

4,221,107
MACHINE FOR FORMING WRAP-AROUND SHIPPER PACKAGES

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Canada

Continuation of Ser. No. 838,983, Oct. 3, 1977, Pat. No. 4,122,939, which is a continuation of Ser. No. 663,092, Mar. 2, 1976, abandoned, which is a continuation of Ser. No. 543,023, Jan. 22, 1975, abandoned, which is a division of Ser. No. 434,043, Jan. 17, 1974, Pat. No. 3,879,920. This application Oct. 27, 1978, Ser. No. 955,248
The portion of the term of this patent subsequent to Apr. 29, 1992, has been disclaimed.
Int. Cl.[3] B65B 5/02, 9/10
U.S. Cl. 53—575 1 Claim



1. A packaging machine for use forming a shipper package from a paperboard blank which has a front and back panel connected to one another at one edge thereof by a side panel and side flaps connected at the other edges of said front and back panels, said side panels being connectable to one another to form an open ended sleeve and end flaps at opposite ends of said sleeve for closing said sleeve, said packaging machine comprising;

(a) a loading station, a wrapping station, a first end closure station, a discharge station and a second end closure station arranged one after the other in a horizontal plane,

(b) a first conveyor having a horizontal extending forward run extending in a path which extends through said loading station, said wrapping station, said first end closure station and said discharge station,

(c) drive means for continuously driving said first conveyor through said loading station, wrapping station, first end closure station and discharge station,

(d) a plurality of mandrel buckets mounted on and retained by said first conveyor for movement therewith along said path, said mandrel buckets each having an article receiving compartment at one end thereof which opens upwardly and laterally at a first side of said firt conveyor to permit loading and discharge of articles respectively with respect to said compartments, said mandrel buckets being retained at spaced intervals along the length of said first conveyor to provide a carton blank receiving passage extending laterally inwardly from said first side of said first conveyor between each adjacent end portion of said mandrel buckets when is said wrapping station,

(e) loading means in said loading station disposed above said first conveyor for loading articles into said article receiving compartment of each mandrel buckets by way of said open upper end as its associated mandrel bucket is continuously driven through said loading station,

(f) carton blank storage means disposed adjacent said wrapping station for storing a plurality of carton blanks,

(g) dispenser means extending from said carton blank storage means to said wrapping station, said dispenser means being operable to move a carton blank from said storage means and deliver a carton blank to said wrapping station and into each carton blank receiving passage in advance of each mandrel bucket with said side panel aligned with a leading edge of said mandrel bucket,

(h) blank folding means disposed above and below said path in said wrapping station for engaging said front and back panels and folding them about their connection with said side panel as said mandrel buckets are driven through said wrapping station and means in said wrapping station for

folding and sealing said side flaps to form an open ended sleeve about said mandrel bucket,

(i) first end closure means in said first end closure station for folding said end flaps inwardly upon one another at a first end of said sleeve and

(j) discharge means in each article receiving compartment for discharging an article therefrom through said lateral opening in a direction toward said first closed end of said sleeve thereby discharging said article and sleeve from said conveyor and second end closure means in said second end closure station for closing said second end of said sleeve.

4,221,108

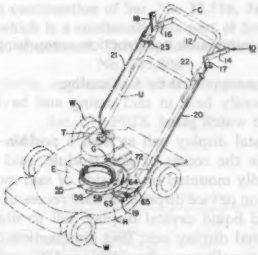
LAWNMOWER SAFETY CONTROL SYSTEM

Boyd L. Owens, P.O. Box 142, Cartersville, Okla. 74934

Filed May 25, 1979, Ser. No. 42,672

Int. Cl.³ A01D *69/10, 75/18;* **F16D** *66/02*

U.S. Cl. 56—11.3 **6 Claims**



1. In a lawnmower having a blade housing, a shaft extending into the housing, an engine mounted on the housing and driving the shaft and having a throttle, means supporting the housing for movement over the ground, and a handle carried by the housing and extending therefrom for manual manipulation by an operator, an improved control system to control the rotation of a cutter blade comprising:

(a) centrifugally expanding clutch shoe means mounted on the shaft inside the housing;

(b) a drum surrounding the clutch shoe means and supported to freely rotate with respect thereto, and having an internal surface engageable by the shoe means when expanded, and having an external surface;

(c) a cutter blade fixed to the drum below the expanding clutch shoe means;

(d) a brake caliper assembly having paired inner and outer legs coupled together at a pivot and the assembly being supported by the housing at the pivot, the inner paired legs carrying brake shoes located adjacent to the external surface of the drum, and the caliper assembly including spring means connected between the outer paired legs and yieldably biasing them to pivot in a direction to apply the brake shoes of the inner legs against said external surface of the drum;

(e) manual control lever means carried by the handle; and

(f) linkage means coupling the control lever means with said engine throttle and with said outer paired legs, and operative such that when the control lever means is manually moved to overcome the bias of the spring means on the legs to retract the brake shoes from said external surface, the throttle is advanced beyond idle, and when the control lever means is released the brake shoes are applied by the spring means and the throttle is returned to idle.

4,221,109

TRAVELING THREAD-JOINING DEVICE

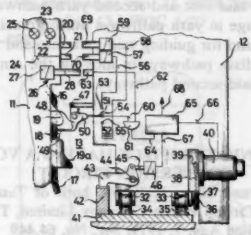
Heinz Kamp, Rickelrath, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 3, 1977, Ser. No. 839,015

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644702

Int. Cl.² D01H *13/22, 15/00*

U.S. Cl. 57—22 **7 Claims**



1. In a thread-joining device capable of traveling from spinning station to spinning station of a spinning machine having respective means for feeding sliver thereto, a device for measuring a dimension of the sliver at the respective feeding means of the spinning stations, said measuring device having supply channel means for guiding the sliver and having a cut out extending transversely to the travel direction of the sliver formed therein.

4,221,110

YARN PIECING DEVICE FOR OPEN-END SPINNING MACHINES

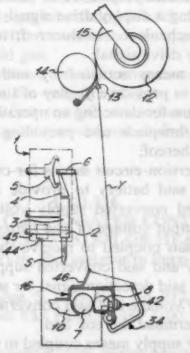
Alan Smith, Accrington, England, assignor to Platt Saco Lowell Limited, Helmshore, England

Filed Sep. 14, 1978, Ser. No. 942,739

Claims priority, application United Kingdom, Sep. 14, 1977, 38289/77

Int. Cl.³ D01H *15/02*

U.S. Cl. 57—263 **13 Claims**



1. A device to aid in the piecing up of yarn with fibres within a spinning means of an open-end spinning machine having a pair of delivery or yarn doffing rollers defining therebetween a nipline or a line of nip contact of the rollers one with the other for engaging and delivering yarn from said spinning means, and also having means for feeding discrete fibres to said spinning means for joining or piecing with said yarn, said piecing aid device including

yarn pathway forming and yarn guiding means

for (a) forming a first yarn pathway outside of said nipline to define a specific reserve length of yarn sufficient to be fed back into said spinning means and there to join with said fibres, and for guiding said yarn into said first yarn pathway,

for (b) forming a second yarn pathway intersecting said nipline to define the courseway for yarn during spinning by said machine, and for guiding said yarn into said second pathway,

and for (c) forming the plurality of yarn pathways intermediate said first and second yarn pathways to define the change in yarn pathways during piecing with said device, and for guiding said yarn into and through said intermediate pathways in moving the same from said first to said second pathways.

4,221,111

ELECTRONIC TIMEPIECE HAVING A VOLTAGE CONVERSION CIRCUIT

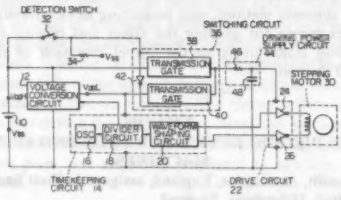
Mitsuo Onda, and Singo Ichikawa, both of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,449

Claims priority, application Japan, Aug. 15, 1978, 53/99249; Jun. 12, 1979, 54/73833

Int. Cl.³ G04B *19/24*; G08B *21/00*

U.S. Cl. 368—35 **13 Claims**



1. An electronic timepiece powered by a battery, comprising:

timekeeping circuit means for producing a standard time signal;

drive circuit means responsive to said standard time signal for producing a display drive signal;

an electro-mechanical transducer driven intermittenly by said display drive signal;

time display means actuated by said electro-mechanical transducer to provide a display of time information;

detection means for detecting an operating condition of said electronic timepiece and providing a detection signal indicative thereof;

voltage conversion circuit means for converting an output voltage of said battery to provide a converted supply voltage, said converted supply voltage being different from the output voltage of said battery;

switching means coupled to receive the output voltage of said battery and said converted supply voltage, and responsive to said detection signal for selectively providing said battery voltage and said converted supply voltage at an output terminal thereof; and

driving power supply means coupled to said output terminal of the switching means, said driving power supply means having output terminals coupled to said drive circuit means for providing a supply voltage thereto, said supply voltage being charged toward the output voltage of said switching means while said electronic timepiece is in an operating state in which power is being supplied only to said timekeeping circuit means, and said supply voltage being discharged by supplying power to said drive circuit means while said electromechanical transducer is being driven.

4,221,112

ELECTRONIC WATCH WITH ILLUMINATION DEVICE

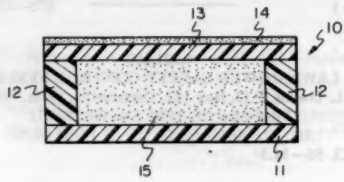
Tadao Enomoto, Higashimurayama; Hiroshi Kolde, Tokyo; Nobuo Ito, Tokyo; Hidefumi Kasai, Tokyo, and Tsutomu Noguchi, Higashimurayama, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 960,340

Claims priority, application Japan, Nov. 16, 1977, 52/136734; Dec. 23, 1977, 52/173565[U]; Dec. 23, 1977, 52/173566[U]; Dec. 23, 1977, 52/173567[U]; Feb. 25, 1978, 53/023761[U]; Apr. 27, 1978, 53/056494[U]

Int. Cl.³ G04B *19/30*; F21K *2/00*; G02F *1/13*

U.S. Cl. 368—84 **16 Claims**



1. An electronic watch construction comprising:

a casing;

a watch glass supported by said casing;

a module fixedly held in said casing and having a recess facing said watch glass;

a liquid crystal display cell at least a portion of which is disposed in the recess of said module, said display cell being fixedly mounted on one side of said module; and

an illumination device disposed in said recess of said module below said liquid crystal display cell to illuminate said liquid crystal display cell, said illumination device comprising side sealing members arranged in a predetermined shape to define a space therein, a back sealing member provided at a bottom portion of said space, a top sealing member provided at a top portion of said space, a layer of light-storing paint formed on a top surface of said top sealing member and having a high degree of reflectivity, and a light emitting paint disposed in said space.

4,221,113

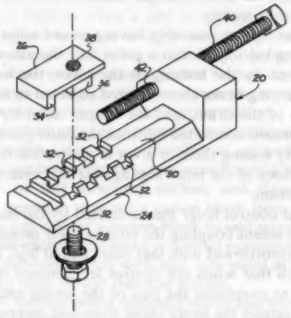
TOOL FOR SEPARATING AND CONNECTING LINKS OF FLAT CHAIN BELT

Ronald C. Jordan, Rte. 2, Belle Center, Ohio 43310

Filed Apr. 25, 1979, Ser. No. 33,124

Int. Cl.³ B21L *21/00*

U.S. Cl. 59—7 **5 Claims**



1. An apparatus for connecting or disconnecting flat link type chain belts comprising in combination;

a frame means including a base portion and link-retaining portion extending outwardly from said base portion, said retaining portion including a pair of parallel extending legs spaced from one another to form an opening between said legs adapted to slideably receive a link of flat chain belt;

a longitudinally extending slot in at least one of said legs;

a threaded fastener means extended through said slot and into engagement with a link disposed between said legs to releasably lock said link between said leg portions; a threaded rod threadably mounted in said base portion and having an inner end aligned with the link connection between the link locked between said legs and a next adjacent link means whereby said threaded rod may be driven into force transmitting engagement with the link connection between said adjacent links to force said connected portions apart from one another.

4,221,114

GAS TURBINE JET PROPULSION ENGINE

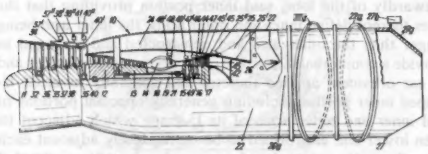
Geoffrey L. Wilde, Derby, and Jack Britt, Ambergate, both of England, assignors to Rolls-Royce Limited, London, England

Continuation of Ser. No. 338,201, Mar. 5, 1973, abandoned, which is a continuation of Ser. No. 12,516, Jan. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 697,560, Jan. 5, 1968, abandoned. This application Nov. 29, 1976, Ser. No. 745,808

Claims priority, application United Kingdom, Jan. 18, 1967, 2741/67

Int. Cl.² F02K *3/06, 1/16*

U.S. Cl. 60—242 **8 Claims**



1. A by-pass gas turbine jet propulsion engine comprising in flow series independently rotatable low and high pressure axial flow compressors, combustion equipment, independently rotatable high and low pressure turbines drivingly connected to the high and low pressure compressors respectively, an exhaust duct, a by-pass duct which is arranged to receive at its upstream end a proportion of the air compressed by the low pressure compressor, a mixing device providing a large area of communication between the downstream end of said by-pass duct and said exhaust duct, reheat combustion equipment disposed in said exhaust duct downstream of said mixing device, the low pressure turbine having at least one stage of variable nozzle guide vanes and the exhaust duct having an outlet nozzle of variable effective area, said low pressure compressor and said low pressure turbine having their rotational speed controlled by controlling said nozzle guide vanes and said outlet nozzle, said low pressure compressor having an outlet end which has an annulus area which is larger than conventional for efficient operation of said low pressure compressor at the higher rotational speed end of its useful speed range, the annulus area of said low pressure compressor decreasing toward the high pressure end of the compressor to an extent such that the compressor has substantially uniform flow velocity from its inlet to its outlet end at approximately the center of its useful speed range, and said low pressure compressor having a plurality of stages, at least the stage nearest the high pressure compressor being provided with a stage of variable incidence stator blading whereby the low pressure compressor is adapted to pass a relatively high mass flow at lower rotational speeds of its useful speed range, the effective by-pass ratio of the engine being controlled by controlling the rotational speed of the low pressure compressor and turbine and effective area of the outlet nozzle.

4,221,115

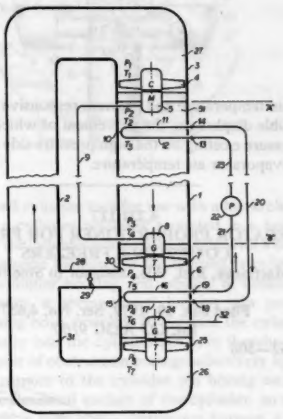
ALTITUDE GAS PRESSURE DIFFERENTIAL POWER PLANT

Robert A. Kraus, and Edmund J. Kraus, both of 14160 Redhill #39, Tustin, Calif. 92680

Continuation-in-part of Ser. No. 763,498, Jan. 28, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,246

Int. Cl.² F02C *1/02*

U.S. Cl. 60—398 **13 Claims**



1. A device for producing power by utilizing the gravity-induced compressional forces in a conduit of enormous height comprising:

(A) first and second vertical conduits of substantial height, said conduits being connected at their upper and lower ends to define a closed fluid system, said height being of such a magnitude as to cause a gas in said first conduit to experience a gravity-induced compression;

(B) a compressible gas circulating in said closed system;

(C) means in said first conduit at an upper elevation for compressing said gas;

(D) means downstream of said compressor, but also at an upper elevation, for cooling said gas;

(E) means in said first conduit at a lower elevation for expanding the thus compressed and cooled gas to generate a work output.

4,221,116

TEMPERATURE COMPENSATED CONTROL FOR AIR CONDITIONING SYSTEM OR HEAT PUMP

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

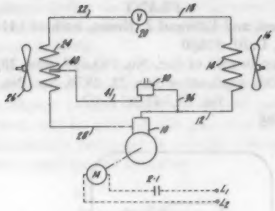
Filed Jun. 5, 1978, Ser. No. 912,636

Int. Cl.² F25B *41/00, 1/00*

U.S. Cl. 62—209 **7 Claims**

1. A vapor compression cycle refrigeration system comprising: a compressor having a discharge outlet and a suction inlet, a condenser, an expansion device, and an evaporator, all connected in closed circuit relation such that the high pressure side of the system is between the compressor discharge outlet and the expansion device and the low pressure side of the system is between said expansion device and said compression suction inlet; an electric motor driving said compressor; and cutout means for discontinuing the power supplied to said electric motor including means responsive to: (1) pressure on the high pressure side of said system; and (2) evaporator air tempera-

ture, and switch means operated by said temperature and pressure responsive means such that an increase in high side pressure will tend to open said switch means and an increase in evaporator air temperature will tend to close said switch



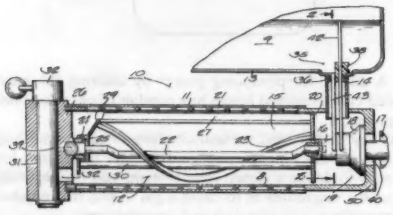
means, said temperature and pressure responsive means including a flexible diaphragm, the movement of which is a function of the pressure existing on the high pressure side of said system and the evaporator air temperature.

4,221,117

AERATOR PROPORTIONER FOR FROZEN COMESTIBLE FREEZERS

Tom N. Martineau, Kiel, Wis., assignor to Stoelting, Inc., Kiel, Wis.

Filed Jan. 19, 1979, Ser. No. 4,637
Int. Cl.[2] A23G 9/00
U.S. Cl. 62—306 **7 Claims**



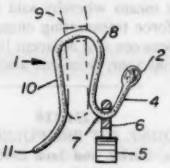
1. In a non-pressurized frozen comestible freezer having a freezing chamber in which a mixture of liquid comestible and air are blended and cooled to a serving consistency, an air and liquid comestible receiving chamber adjacent to and communicating with said freezing chamber, a supply tank for liquid comestible, a passage between said tank and receiving chamber and an aerator proportioner to feed desired proportions of liquid comestible and air from the tank to the receiving chamber, the improvement in which said aerator proportioner comprises support means for supporting tubes in said passage, a liquid comestible feeding tube having a continuous side wall with upper and lower ends, said tube being mounted on said support means and extending through said passage into said receiving chamber, the upper end of said liquid comestible feeding tube terminating near the bottom of the tank to be exposed solely to liquid comestible in said tank and to be isolated by the liquid comestible in said tank from air above the level of liquid comestible in said tank whereby to carry only liquid comestible delivered by gravity flow from said tank to said freezing chamber, and a separate air tube mounted on said support means and extending through said passage into the receiving chamber, said air tube having a continuous side wall with upper and lower open ends, the upper end of said air tube being disposed above the level of liquid comestible in said tank to be exposed solely to air thereabove whereby to carry only air and said lower ends of said air tube and said feed tube being positioned at a selected height within said freezing chamber to maintain the level of mix at the height of said air tube lower end to provide the desired consistency of frozen comestible.

4,221,118

HOLDER FOR EARRINGS

Sheila Chicckine, Old School, Glen Allan, R.R #2, Wallenstein, Canada

Filed Jan. 27, 1978, Ser. No. 872,904
Claims priority, application Canada, Jan. 11, 1977, 290022
Int. Cl.[2] A44C 7/00
U.S. Cl. 63—13 **1 Claim**



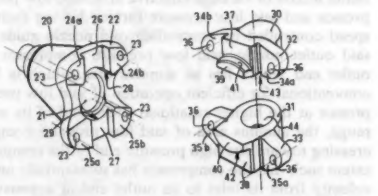
1. An ear ornament holder of the pierced ear type comprising a single serpentine rod, said rod having an integral form including a generally U-shaped outer portion providing a bight for holding an ear ornament, said outer portion having an extension forming with one side of said outer portion a generally inverted U-shaped inner portion adapted to be inserted through an ear lobe of a user of the holder for retention in connection therewith and to hold the applied ear ornament outwardly of the lobe, said inner portion providing that the sides thereof define inner and outer arms, the inner arm being longer than the outer arm and constructed and arranged to provide a counterbalance to the outer portion of the holder and an ear ornament applied thereto, said generally inverted U-shaped inner portion including generally opposed portions of said inner and outer arms of its U-shape which adjacent its open lower end are formed to be more closely adjacent each other than adjacent its closed upper end and are so constructed and arranged as to gently squeeze therebetween a lower portion of the ear lobe of the user of the holder to retain the holder and the applied ornament in a relatively established position with reference to and outwardly of the ear lobe.

4,221,119

CARDAN JOINT OF THE BLOCK BEARING TYPE

Jacques Mangiavacchi, Chatou, France, assignor to Glaenzer Spicer, Poissy, France

Filed Jan. 31, 1979, Ser. No. 7,957
Claims priority, application France, Feb. 16, 1978, 78 04384
Int. Cl.[3] F16D 3/26, 3/33
U.S. Cl. 64—17 R **10 Claims**



1. Cardan joint of the block bearing type for the end-to-end coupling of two rotary shafts, said joint comprising two flanges provided for mounting on said shafts, two pairs of block bearings fixed to the flanges by suitable fixing means and a spider for the transmission of the torque between the latter, the trunnions of the spider being mounted to oscillate in the

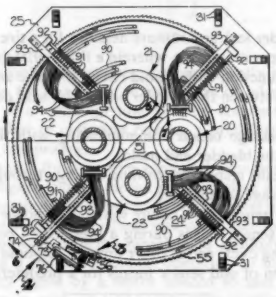
block bearings, drive tenons included in the blocks and clampable in a corresponding recess of the associated flange, a centering bearing surface engageable at least partially in a seating bearing surface of complementary shape of said flange so as to center the bearings and prevent them from moving away from the axis of the joint, the centering bearing surface of the blocks being constituted by the peripheral surface of an end piece provided at the base of the latter and at a distance from the center of the spider less than that of the means of fixing said blocks to the flanges, said peripheral surfaces of the end pieces and the centering bearing surfaces of the flanges being surfaces of revolution having as axes those of the coupled rotary shafts and the radial distance between the drive tenons and the axes of the shafts being greater than that comprised between these same axes and said surface.

4,221,120

MULTIPLE NEEDLE CYLINDER HOSIERY KNITTING MACHINE

Glen R. Farmer, 200 Midway Dr., Spartanburg, S.C. 29301

Filed Nov. 2, 1978, Ser. No. 957,170
Int. Cl.[2] D04B *9/28, 15/68, 15/80, 15/61*
U.S. Cl. 66—222 **8 Claims**



1. A knitting machine for simultaneously knitting a plurality of tubular articles, such as socks, and comprising

(a) a plurality of needle cylinders each supported for rotation about a vertical axis,

(b) drive means for simultaneously rotating said needle cylinders,

(c) knitting means associated with each of said needle cylinders for producing a sock at each of said needle cylinders and including yarn feed means, and needle selector means,

(d) a horizontally disposed pattern disc supported for rotation around said plurality of needle cylinders and including a central opening surrounding said plurality of needle cylinders,

(e) drive means for imparting rotation to said pattern disc in timed relationship to rotation of said needle cylinders,

(f) cam means supported in annular races on said horizontally disposed pattern disc, and

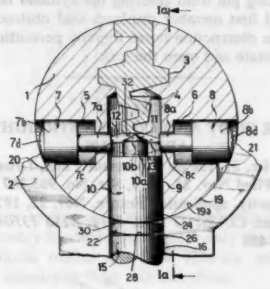
(g) separate linkage means operatively associated with said yarn feed means and said needle selector means of each of said needle cylinders for controlling the operation thereof, said linkage means associated with said yarn feed means and said needle selector means of one of said needle cylinders being operable by said cam means at a first location, said linkage means associated with said yarn feed means and said needle selector means of another of said needle cylinders being operable by said cam means at a second location, and said second location being circumferentially spaced from said first location on said pattern disc.

4,221,121

MULTI-LEVEL LOCK SYSTEM AND METHOD

Werner Tietz, Berlin, Fed. Rep. of Germany, assignor to Zeiss Ikon AG. Goerzerk, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,787
Int. Cl.[2] E05B *27/06*
U.S. Cl. 70—358 **6 Claims**



1. An improved cylinder lock for use with a hierarchical key system having a cylinder rotatably mounted in a housing, a radial boring in the cylinder which is alignable with a boring of substantially the same diameter in the housing, a cylinder pin located in the cylinder housing and capable of limited radial movement therein, a spring-biased locking pin positioned within the housing bore, operable to displace the cylinder pin and move partially into the cylinder pin bore thereby locking the cylinder; a pair of obstruction borings selectively located at an angle with respect to the cylinder pin boring and which open onto the cylindrical surface of the cylinder, an obstruction pin mounted in each of the obstruction borings, a key slot in the cylinder wherein a key may be inserted to displace the cylinder pin and the obstruction pins a predetermined amount thereby unlocking the lock and permitting the cylinder to rotate and unlock the lock;

the improvement comprising:

an improved cylinder pin comprising a first and a second member; said first member having a first and a second end, said first end having a sensing member disposed so that the grooves in a key inserted into the key slot may be sensed, said sensing member having a smaller diameter than said first member, said second end having a curvature corresponding to the curvature of the cylinder; said second member having a generally cylindrical shape with a first end having a flat surface and a second end having a curvature corresponding to the curvature of the cylinder, said second member being located between said first member and the spring biased locking pin with said second, curved surface of said first member adjacent to said first, straight, surface of said second member and said second, curved, surface of said second member adjacent to the spring biased locking pin;

the obstruction pins each comprising operative rib sensing surfaces whereby;

when a higher level key is inserted into the key slot, said sensing surfaces of said obstruction pins sense ribs on the key of a predetermined width which displace said obstruction pins a predetermined distance thereby closing the ends of the obstruction bores which open onto the cylindrical surface of the cylinder and said sensing member senses the depth of the selected groove cut into the key thereby displacing said first member so that said curved second surface of said first member displaces said second member into the housing boring thereby unlocking the cylinder and permitting rotation thereof to unlock the lock;

when a lower level key is inserted into the key slot, said

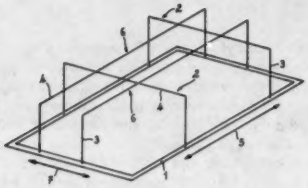
sensing surfaces of said obstruction pins do not sense ribs on the key as the lower level keys have had the ribs removed by cutting a deep groove into the key coincident with the location of the ribs of the higher order key, the deep groove sensed by said sensing member of said first member permits said first and second members to be radially displaced a preselected distance such that said second surface of said second member is located so as to prevent the locking pin from entering the cylinder bore and such that said first member displaces said obstruction pins to close the obstruction bores thereby permitting the cylinder to rotate and open the lock.

4,221,122

VEHICLE BODY AND CHASSIS STRAIGHTENING APPARATUS

Alain Couturier, 37, rue du Professeur Patel, Lyon, France

Filed Nov. 24, 1978, Ser. No. 963,287
Claims priority, application France, Nov. 25, 1977, 77 36453
Int. Cl.[3] B21D *1/12, 1/14;* B21J *13/04*
U.S. Cl. 72—455 **9 Claims**



1. A vehicle-repair apparatus comprising:
a floor-mounted generally rectangular track havng a pair of generally parallel spaced longitudinal sides and a pair of generally parallel transverse sides, said sides beng spaced apart sufficiently to accept a vehicle for repair between themselves;
a longitudinally extending portal having a pair of upright leg members and an upper cross member connecting said leg members together;
a transversely extending portal having a pair of upright leg members and an upper cross member connecting the respective leg members together, said portals being generally planar in respective upright and substantially perpendicular longitudinal and transverse planes;
means supporting said leg members of said longitudinal and transverse portals respectively on said transverse and longitudinal sides of said track for transverse longitudinal displacement therealong;
means at each of said leg members for locking same to the respective side;
means on said cross members for releasably rigidly locking same together and thereby arresting said portals on said track;
a support securable to at least some of said members; and
a body-repair jack mountable on said support and engageable with the body of a vehicle under said portals.

4,221,123

SEPARATOR MATERIALS FOR SECONDARY ALKALINE BATTERY SYSTEMS AND METHOD OF ANALYTICALLY DETERMINING THE SUITABILITY OF SUCH MATERIALS

Giuseppe D. Bucci, Hanover Park, and James D. Bolstad, Algonquin, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 838,351, Sep. 30, 1977, abandoned. This application Sep. 26, 1978, Ser. No. 945,978
Int. Cl.[3] G01N *15/08*
U.S. Cl. 73—38 **10 Claims**

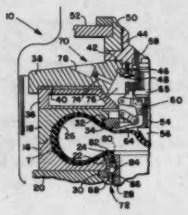
1. A method of screening to determine the suitability of separator materials for secondary alkaline systems which comprises subjecting the separator material to the environment of normally operating secondary alkaline cells for a minimum of 20 full charge and discharge cycles and developing an elemental zinc x-ray map to determine whether penetration in fact resulted.

4,221,124

BLADDER LEAK AND RUPTURE DETECTOR

Thomas C. Jones, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Jul. 27, 1978, Ser. No. 928,402
Int. Cl.[3] G01M *3/26*
U.S. Cl. 73—40 **27 Claims**



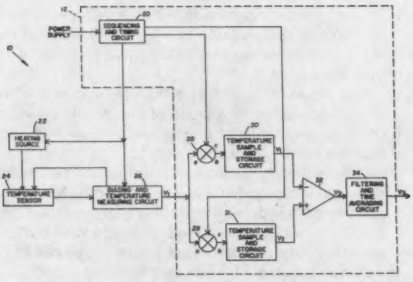
1. A bladder leak and rupture detector for a tire curing press having an operating cycle wherein a fluid-inflatable bladder is used in conjunction with a mold cavity to shape and cure a tire positioned between the bladder and mold, said detector comprising:
leakage passage means communicating with the space between the bladder and mold,
sensor means responsive to fluid leakage through said leakage passage means, and
means for generating a failure signal in response to actuation of said sensor means during a preselected portion of the operating cycle and at other times in response to sustained actuation of said sensor means for a predetermined time.

4,221,125

APPARATUS AND METHOD FOR DETECTING THE PRESENCE OF A SUBSTANCE ON A LIQUID SURFACE

John N. Oliver, Danville, N.H., and Louis M. Sandler, North Reading, Mass., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 9, 1979, Ser. No. 19,147
Int. Cl.[3] G01N *25/18, 33/18*
U.S. Cl. 73—61.1 R **23 Claims**



1. Apparatus for detecting the presence of a substance on a liquid surface comprising: a semiconductor sensing element adapted to be at least partially immersed in said liquid having a thermal resistance related to its proximal environment; a

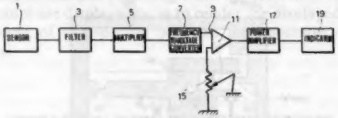
heating source coupled to said sensing element for temporarily heating said element; temperature measuring means responsive to an electrical property of said sensing element; and control logic for sequentially sampling measured ambient temperatures of said proximal environment, temporarily heating said sensing element, sampling measured peak temperatures resulting from temporarily heating said sensing element, and differentiating between said measured ambient temperatures sampled prior to heating said sensing element and said measured peak temperatures whereby said apparatus is not susceptible to ambient temperature fluctuations.

4,221,126

ELECTRONIC DEVICE FOR INDICATING ENGINE SPEED

Ettore Cordiano, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Nov. 21, 1978, Ser. No. 962,732
Claims priority, application Italy, Dec. 22, 1977, 69879 A/77
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **4 Claims**



1. An electronic indicator device permanently affixed to a motor vehicle for providing an indication of when the rotational speed of a spark ignition internal combustion engine having a number of cylinders reaches a predetermined rotational speed, comprising:

detector means for detecting electrical impulses generated by the engine ignition circuit and operating to produce a frequency signal in response thereto, converter means,

multiplying means connecting said converter means to the output of said detector means, said multiplying means including a multiplier circuit operating to multiply said frequency signal by a factor related to said number of cylinders in said internal combustion engine, said converter means operating to produce an output voltage signal the value of which is dependent on the frequency of said multiplied frequency signal,

means for generating a reference voltage representing the value of said voltage signal at said predetermined rotational speed of said engine,

comparator means having first and second inputs, said first input being connected to the output of said converter means and said second input being connected to the output of said means for generating a reference voltage, said comparator operating to produce an output signal only when there is substantial equality between the signals at its frist and second inputs, and

indicator means connected to the output of said comparator means and operating to produce at least one of a visual and an audible indication when said comparator means produces an output signal, whereby to indicate the occurrence of said predetermined rotational speed of said engine.

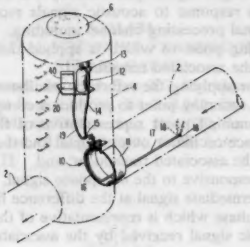
4,221,127

FLOW MONITORING

Charles A. McClure, 5 Laurel Cir., Malvern, Pa. 19355

Filed Jan. 11, 1978, Ser. No. 868,681
Int. Cl.³ G01F *1/52*
U.S. Cl. 73—861 **9 Claims**

1. Apparatus for monitoring gravity flow of liquid in a sewer or water pipe or conduit comprising means for measuring depth of liquid therein, means for receiving pertinent inputs and for calculating liquid flow rate therefrom, manually adjustable input component means for inputting the shape and size of the pipe or conduit and for inputting measured depth of liquid therein and for inputting values of a plurality of flow-affecting



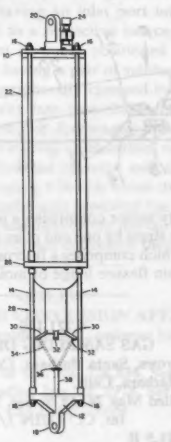
variable factors to the computation means, the latter means including circuitry for determining separately the liquid cross-section, hydraulic radius, and flow velocity, and including circuitry for calculating flow rate therefrom.

4,221,128

ACOUSTIC CURRENT METER

Kenneth D. Lawson, Cataumdet, and Neil L. Brown, Falmouth, both of Mass., assignors to Neil Brown Instruments Systems, Inc., Falmouth, Mass.

Filed Sep. 29, 1978, Ser. No. 947,253
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.29 **39 Claims**



1. A system for measuring a component of the velocity of a flow of liquid and for providing an output signal representative of the velocity component, comprising:

at least two transducers positioned so that acoustic energy emitted by each of the transducers travels along an acoustic path therebetween and impinges upon the other transducer, each transducer including terminals for applying a signal thereto to cause the transducer to emit acoustic signals and for providing a transducer output signal representative of an acoustic signal received by the transducer;

a transmit oscillator for providing an output signal of a first frequency;

means for periodically applying the transmit oscillator output signal to each of the transducers to cause the transducers to emit a burst of acoustic energy;

a reference oscillator for producing an output signal at a

second frequency different from the first frequency by a difference frequency;

first and second signal processing channels respectively associated with the first and second transducers for processing output signals produced by the associated transducer in response to acoustic signals received thereby, each signal processing channel including:

a summing point to which is applied the output signal from the associated transducer;

means for applying the reference oscillator output signal to the summing point to produce a composite signal at the summing point representative of the sum of the reference oscillator output signal and the output signal from the associated transducer; and

means, responsive to the composite signal, for producing an intermediate signal at the difference frequency having a phase which is representative of the phase of the acoustic signal received by the associated transducer; and

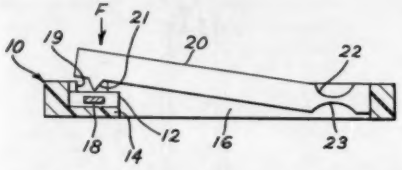
means for comparing the phases of the intermediate signals from the first and second processing channels and for producing a signal representative of the phase difference therebetween to provide a representation of the velocity component being measured.

4,221,129

HUMIDITY SENSOR

Donald L. Sidebottom, and Richard L. Stottmann, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 7, 1979, Ser. No. 36,895
Int. Cl.³ G01W *1/00*
U.S. Cl. 73—336.5 **8 Claims**



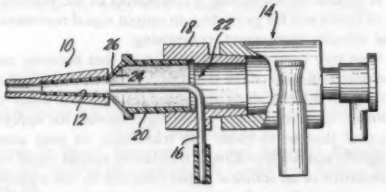
1. A humidity sensor comprising a piezoelectric crystal held in compressive stress by one end of an elongated lever arm, the other end of which comprises a fulcrum section consisting of a substantially thin flexure hinge of moisture sensitive material.

4,221,130

GAS SAMPLING DEVICE

Donald E. Burrows, Santa Barbara, Calif., assignor to Anarad Inc., Santa Barbara, Calif.

Filed May 24, 1979, Ser. No. 42,171
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—421.5 R **5 Claims**



1. A device for sampling a flowing gas comprising:

gas-entry means defining a passage for receiving the flowing gas and providing substantially laminar flow to the gas to an exit end;

gas-receiving means of larger capacity than the passage of the gas-entry means and connected to the exit end of the gas-entry means for receiving the flowing gas from the exit end of the gas-entry means without substantial return dilution thereto; and

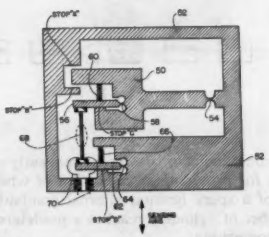
a gas-sampling tube supported only at one end from the gas-receiving means for not impairing the laminar flow in the gas entry means and projecting at the other end only to the exit end of the gas-entry means and coaxially spaced from the passage therein for sampling the flowing gas, the gas-sampling tube projecting through the gas receiving means for connection to a device processing the sampled gas.

4,221,131

VIBRATING BEAM ACCELEROMETER

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 29, 1979, Ser. No. 42,826
Int. Cl.³ G01P *15/09*
U.S. Cl. 73—517 AV **19 Claims**



1. An accelerometer, or the like, comprising:

a housing;

a proof mass mounted in the housing for reciprocal movement with respect to a sensing axis;

an elongated vibrating beam resonator; and

means coupling the ends of the resonator to the housing and to the proof mass respectively so that the axis of the resonator is parallel to the sensing axis, said last-named means including relief means for releasing said resonator when the force along said sensing axis exceeds a particular threshold.

4,221,132

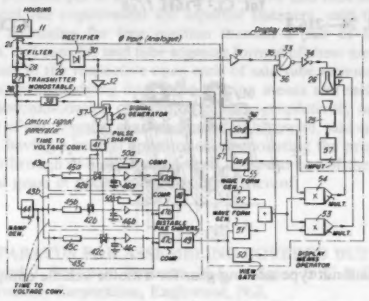
ULTRASONIC NONDESTRUCTIVE TESTING APPARATUS

Michael J. Poole, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 6, 1979, Ser. No. 9,820
Claims priority, application United Kingdom, Feb. 9, 1968, 5266/78
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—620 **16 Claims**

1. Apparatus for ultrasonically inspecting a structure in which both the structure and the apparatus are immersed in a medium through which sound can travel and in which the apparatus is spaced a variable distance from the structure characterised in that there is provided means for scanning a pulsed beam of ultrasound over the surface of the structure at a predetermined angle of incidence to the surface, means for generating return signals corresponding to ultrasound, returning to the apparatus from the structure, means for deriving from the said return signals signals representative of discontinuities within the structure, display means for displaying the signals representative of discontinuities within the structure, means for deriving from the said return signals signals corresponding to ultrasound returning from a reference region

forming part of the structure and for generating control signals related thereto, means responsive to the control signals for controlling the operation of the display means such that only those portions of the return signals occurring after those derived from ultrasound returning from the reference region of the structure are displayed so as to render the displayed signals independent of the spacing between the apparatus and the structure.



4,221,133
VIBRATORY-WIRE PRESSURE SENSOR

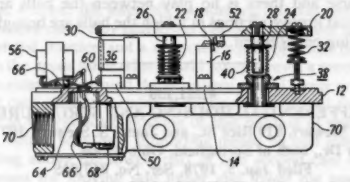
Everett O. Olsen, Wrentham, and Howard W. Nudd, Jr., Foxboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 732,130, Oct. 13, 1976, Pat. No. 4,149,422. This application Oct. 25, 1978, Ser. No. 954,628

The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.

Int. Cl.[3] G01L *1/10, 13/06*

U.S. Cl. 73—704 **1 Claim**



1. A force-sensor of the vibrating-wire type for use in a process instrumentation system for developing a measurement signal corresponding accurately to an applied force within a predetermined operating range; said sensor comprising:

wire-supporting means including first and second means adapted to tightly grip the ends of a wire;

a wire held tautly between said first and second means;

pressure-responsive means coupled to said first and second means to apply thereto a force tending to move said first and second means apart so as to apply a tension to the wire;

said wire being in the form of a substantially flat ribbon having a thickness of about 0.001 inches, and an aspect ratio of at least 10:1;

wire-excitation means to produce vibrations of said wire in the primary mode; and

bias tension spring means permanently coupled to said wire-supporting means and continuously operable at all times during measurement operation of the instrument to elevate the tension applied to said wire by said pressure-responsive means so as to operate the wire within a tension range which is substantially offset from zero, whereby said wire tension during measurement operation of the instrument never approaches a tension near zero and so that the natural frequency of oscillation at zero tension is not a factor in the functioning of the instrument.

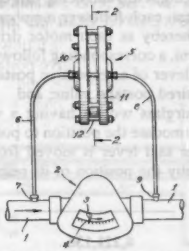
4,221,134
DIFFERENTIAL PRESSURE TRANSDUCER WITH STRAIN GAUGE

Regner A. Ekstrom, Jr., P.O. Box 232, Markham, Ill. 60429

Continuation-in-part of Ser. No. 968,511, Dec. 11, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 67,435

Int. Cl.[3] G01L *9/06;* **G01F** *1/38*

U.S. Cl. 73—721 **23 Claims**



1. A differential pressure sensor, comprising a pair of plates each having a corresponding recess formed in an opposing face, means for clamping said plates together to form an interior cavity, each plate having an inlet port into said cavity adapted to be connected to a respective source of fluid pressure, a sealed diaphragm assembly positioned between said plates across said cavity having a pair of substantially parallel juxtaposed diaphragms peripherally clamped by said plates to sealingly divide said cavity into two chambers, and a strain assembly situated between said diaphragms and responsive to deflection thereof for producing an electrical variable indicative of the pressure differential between said chambers, said diaphragm assembly including a flexible metal strip arranged in parallel between said diaphragms spanning the width of said cavity, said strain gauge assembly being operatively affixed to said strip for sensing curvilinear deflection thereof.

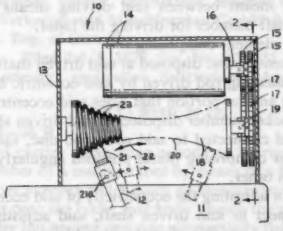
4,221,135
POSTAGE METER CONVERSION APPARATUS

Keith E. Schubert, Rowayton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 726,638, Sep. 27, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,404

Int. Cl.[2] F16H *19/04*

U.S. Cl. 74—29 **4 Claims**



1. The combination of a postage meter and a conversion apparatus for converting a lever settable mechanical postage

meter into an electrically controlled postage meter, comprising:

a postage meter having a number of setting levers, each of which is movable along an arcuate path in an incremental position to position variation to set the postage meter to a selected value;

a driving motor for each postage meter lever;

a rotatably hourglass worm for each postage meter lever, each hourglass worm being operatively connected to, and rotatively driven by, a respective driving motor, each of said hourglass worms having an arcuate profile along a threaded periphery thereof, which conforms with the arcuate path of a corresponding lever;

a follower member for each hourglass worm, each follower member engaging with, and being driven by its respective hourglass worm, each follower member being connected to a lever, whereby as each motor drives its respective hourglass worm, a corresponding follower member causes an associated lever of a respective postage meter bank to be set to a desired postage value; and

each of said hourglass worms having a variable threaded pitch to accommodate the position to position incremental variation when said lever is moved from one setting to another whereby the position of its respective lever may be monitored.

4,221,136

SEWING MACHINE AND SPEED ADJUSTMENT MECHANISM THEREOF

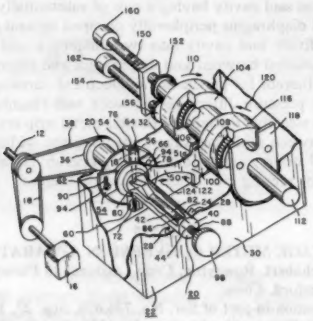
Matthew J. Visconti, 547 Liberty Pl., Ridgefield, N.J. 07657

Filed Mar. 18, 1977, Ser. No. 778,874

The portion of the term of this patent subsequent to Aug. 9, 1996, has been disclaimed.

Int. Cl.[2] F16H *29/04*

U.S. Cl. 74—117 **40 Claims**



1. A mechanical system for speed adjustment, comprising:

(a) mechanical driving means,

(b) a driven shaft member,

(c) linking means between said driving means and said driven shaft member for driving the latter,

(d) a crank element comprising

(i) an eccentric disc disposed at said driven shaft member,

(ii) a connecting rod driven by said eccentric disc, comprising an arm portion that rides said eccentric disc,

(iii) a bracket member disposed at said driven shaft member and connected to said eccentric disc, said bracket member comprising plural portions angularly oriented to each other,

(e) means for adjusting the eccentricity of said eccentric disc with respect to said driven shaft, said adjusting means comprising a spacing element movable into and from a position between said crank element and said driven shaft, and

(f) an output shaft element driven by said connecting rod.

4,221,137

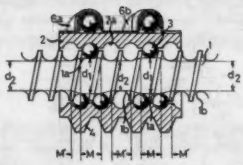
BALL NUT TYPE STEERING GEAR

Takeshi Futaba, Yao, Japan, assignor to Koyojidoki Kabushiki Kaisha, Kashihara, Japan

Filed Mar. 6, 1979, Ser. No. 18,034

Int. Cl.[2] F16H *1/18*

U.S. Cl. 74—216.3 **4 Claims**



1. A ball nut type steering gear for a motor vehicle comprising;

a threaded shaft formed with helical groove sections;

a ball nut formed with helical groove sections and mounted over said threaded shaft for movement axially of the threaded shaft through two trains of balls;

a rack formed on the outer periphery of said ball nut; and a sector gear in meshing engagement with said rack;

said two trains of balls being confined in passageways formed by respective ones of the helical groove sections in said threaded shaft and said ball nut so as to move the ball nut axially of the threaded shaft as the latter is rotated to thereby rotate said sector gear to change the direction of travel of the motor vehicle;

wherein the improvement comprises:

two major diameter portions formed in said threaded shaft and spaced apart from each other by a minor diameter portion, so that said two trains of balls are brought into engagement in the helical groove sections in the major diameter portions of the threaded shaft and the ball nut only when the motor vehicle travels along a straight course and there is no play between the balls and the helical groove sections in which the balls are brought into rolling engagement.

4,221,138

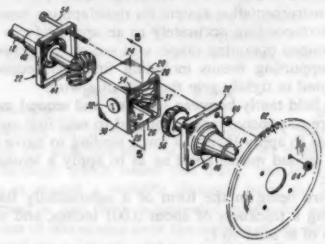
DIFFERENTIAL HOUSING AND STRUCTURE

Basil G. Stewart, 819 Rice St., and James S. Stewart, 107 Greenacres Dr., both of Springfield, Ohio 45504

Filed Jan. 5, 1978, Ser. No. 867,045

Int. Cl.[3] F16H *57/02, 1/40*

U.S. Cl. 74—607 **14 Claims**



12. A differential housing the peripheral wall of which is continuous, said housing being comprised of two segments of sheet metal which are generally U-shaped in cross section and have their free ends joined and sealed together in an overlapped interconnected relation to form a generally rectangular integral tube segment opposite wall portions of which are

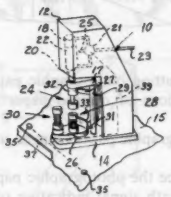
reinforced, a transfer shaft within and extending transversely of said tube segment and into apertures in opposite side wall portions thereof, said transfer shaft having portions thereof which per se are joined directly to portions of said opposite wall portions per se to fix said shaft relative said tube segment without the requirement for separate fasteners, said transfer shaft mounting for free rotation thereon a pair of transfer gears, end caps for said tube segment formed of sheet metal and applied to the respective open ends of said tube segment, said end caps embodying integrated bearing means and said housing accommodating differential gears to respectively opposite sides of said transfer gears and in mesh therewith, said end caps each having a central aperture accommodating the projection therethrough of a differential shaft to mount one of the differential gears in said housing for drive thereof.

4,221,139

APPARATUS FOR ASSEMBLING COVERED BUTTONS

Richard J. Peterson, Paramus, N.J., assignor to C & C Metal Products Corporation, Englewood, N.J.

Filed Mar. 15, 1979, Ser. No. 21,303
Int. Cl.[3] A44B *1/06*
U.S. Cl. 79—1 **4 Claims**



1. Apparatus for assembling a covered button made up of a shell having a peripheral flange and a piece of covering material and a back having a base, including in combination an upper punch and an upper sleeve carried by said upper punch for movement between a retracted position and an extended position, a lower die assembly comprising a lower post and a lower sleeve carried by said lower post for movement between an extended position and a retracted position, a first cam surface on the upper inner edge of said lower sleeve, a second cam surface extending around the periphery of said lower post, said second cam surface forming a continuation of said first cam surface in the retracted position of said position of said lower sleeve, button back base supporting means on said lower post extending above the lowest part of said second cam surface, and means for moving said upper and lower die assemblies toward each other.

4,221,140

FILTER WRENCH

Bobby R. Bracey, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 22, 1978, Ser. No. 918,150
Int. Cl.[2] B25B *13/52*
U.S. Cl. 81—64 **3 Claims**

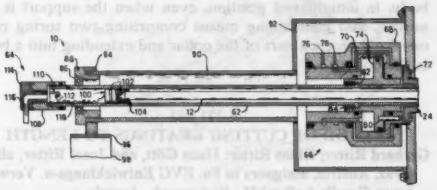
1. A strap wrench adapted to rotate containes, comprising in combination, a tool having a polygonal head at one end for being grasped by a conventional wrench in order to be rotated, said tool having a longitudinally extending slot providing opposing edges at both sides of said slot in combination with an endless strap of flexible material fitted through said slot closely adjacent said edges, whereby rotation of said bolt causes said edges to grasp said strap along transversely spaced areas thereabout a container and whereby said slot extends through said head.

4,221,141

METHOD AND APPARATUS FOR FEEDING BAR STOCK TO A MACHINE TOOL

Peter M. Oliver, Campbell, Calif., assignor to Magnum Tooling Systems, Inc., South San Francisco, Calif.

Filed Jan. 29, 1979, Ser. No. 7,161
Int. Cl.[3] B23B *13/00, 27/00*
U.S. Cl. 82—2.5 **15 Claims**



1. A bar feed arrangement for intermittently feeding a piece of bar stock through a rotatable spindle of a machine tool having chuck means at the front of the spindle for releasably holding the piece of bar stock with a leading portion thereof extending to a work station, said arrangement comprising

an integral feed and chuck actuator tube extending through the spindle, which tube is rotatable with the spindle while being relatively axially movable therewith,

chuck actuator means attached to the rear of the spindle for axially moving said tube for actuation of the chuck means between chuck open and chuck closed positions, said tube extending rearwardly of said spindle and being rotatably supported intermediate its opposite ends by said chuck actuator means,

bearing means adjacent the rear end of said tube for support of the tube for rotatable and axial tube movement.

a piston axially movable within said tube under operation of fluid pressure supplied to the rear of the tube, and

means for connecting said tube to a fluid pressure source for urging the piston against the rear end of the bar stock and feeding the bar stock along the tube and through said chuck means when the chuck means are actuated to chuck open position by axial movement of the tube by said chuck actuator means.

4,221,142

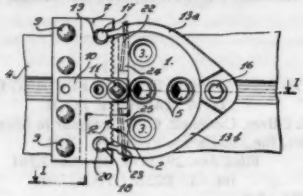
TOOL CARRIER

Emile A. Minder, Vernier, Switzerland, assignor to Erhardt & Spiess, Werkzeug- und Maschinenbau GmbH & Co., Vaihingen, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 922,231
Claims priority, application Switzerland, Aug. 15, 1977, 9947/77
Int. Cl.[3] B23B *29/00*
U.S. Cl. 82—36 R **1 Claim**

1. A tool carrier comprising a body to be rigidly fastened onto a member of a machine tool by means of a fixing device, a tool carrier support and a quick tightening device for fixing the support onto the body, said body having the general shape of a cylinder but having one side substantially flat and parallel to the longitudinal axis of the cylinder and having notches in said one side that extend parallel to the axis of the cylinder, said support having a substantially flat face having notches cooperating with said notches in said face of the body, a tightening

collar matching the body along its cylindrical portion, means connecting the ends of the tightening collar in a removable manner to the body, said tightening collar being in two parts connected between themselves and by means of an eccentric shaft the rotation of which controls the tightening of the support on the body, and means for maintaining the collar on the body, in untightened position, even when the support is removed, said maintaining means comprising two spring rods one fixed on each part of the collar and extending into a bore in the body.

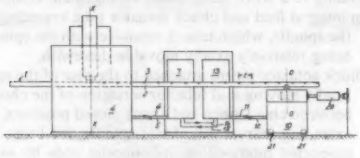


4,221,143

METHOD OF CUTTING GRATINGS TO LENGTH

Gerhard Ritter; Klaus Ritter; Hans Gött, and Josef Ritter, all of Graz, Austria, assignors to Fa. EVG Entwicklungs-u. Verwertungs-Gesellschaft mbH., Steiermark, Austria

Filed Dec. 7, 1978, Ser. No. 967,407
Claims priority, application Austria, Sep. 8, 1978, 6523/78
Int. Cl.[2] B23D *25/04*
U.S. Cl. 83—37 **5 Claims**



1. A method of cutting off sections of a grating web of any desired length, said grating web comprising longitudinal elements and cross-bars, said method comprising the steps of

(a) cutting said web by means of a shear introduced into the plane of said grating web, said shear having cutting blades in the form of comb teeth movable relative to one another;

(b) establishing by means of a computer whether, at the distance from the last cut edge of said grating web corresponding to the desired length of the next section of grating required, there is a gap between said cross-bars to enable the introduction of said cutting blades into said grating web;

(c) in the event of said computer establishing that there is a gap between said cross-bars, causing relative movement between said shear and said grating web over said desired length of said next section of grating required and cutting said web in response to a signal from said computer; and

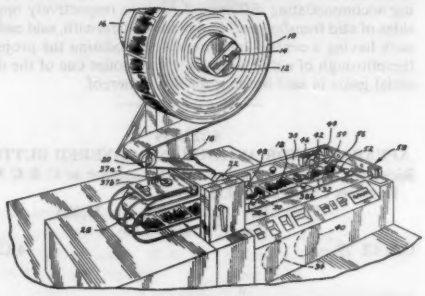
(d) in the event of said computer establishing that there is not a gap in said cross-bars, causing relative movement between said grating and said shear over a short distance and severing a short scrap section of said grating web in response to a signal from said computer, said length of said scrap section being calculated by said computer such that, at the required distance from said new cut edge corresponding with said desired length of said next section of grating required there is a gap between said cross-bars, and causing further relative movement between said grating web and said shear over said desired length of said next section of grating required and cutting said grating web in response to a signal from said computer.

4,221,144

PAPER FEED CONTROL FOR AUTOMATIC PHOTOGRAPHIC PAPER CUTTER

Robert E. Diesch, Rogers, and Gerald R. Strunc, Maple Grove, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Division of Ser. No. 838,000, Sep. 29, 1978, Pat. No. 4,163,405.
This application Dec. 26, 1978, Ser. No. 972,979
Int. Cl.[3] G03D *15/04*; B26D *5/34*
U.S. Cl. 83—27 **5 Claims**



1. A method of cutting photographic paper bearing indicia for indicating locations of desired paper cuts, the method comprising:

moving the photographic paper from an indicium to another indicium;

sensing the distance the photographic paper was moved;

storing a feed length signal indicative of the distance the photographic paper was moved;

aligning a location of a desired paper cut with a reference mark;

moving the photographic paper to an indicium;

sensing the distance the photographic paper was moved;

deriving a feed-after-sense signal from the feed length signal and the distance the photographic paper was moved from the location of a desired paper cut to an indicium;

storing the feed-after-sense signal;

advancing the photographic paper to an indicium and then beyond the indicium by a distance determined by the feed-after-sense signal; and

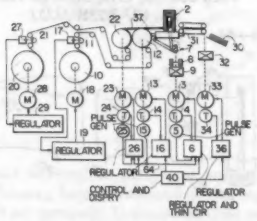
cutting the photographic paper.

4,221,145

RUNNING WEB CUTTING MACHINE

Shigehisa Shimizu, and Shigemitsu Mizutani, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 14, 1978, Ser. No. 960,546
Claims priority, application Japan, Nov. 14, 1977, 52-135652
Int. Cl.[3] B26D *1/56*
U.S. Cl. 83—71 **11 Claims**



1. In a running web cutting machine in which a vertically

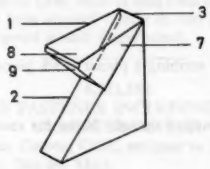
movable cutter is driven by a crank mechanism the improvement comprising; a reciprocating stand holding an upper cutting edge and a lower cutting edge, said stand disposed for movement in the direction of advancement of a web along a guide, a cutter driver motor, said upper and lower cutting edges being driven by drive means coupled to a single crank shaft coupled to said cutter driving motor, wherein a value J=J Wo/To, where J is the conversion inertial moment of a driving motor including a load, Wo is the rated speed thereof, and To is the rated torque thereof of said cutter driving motor is selected to be J_C, and a value J of a web feeding motor driving a web feeding drum is represented by J_F, then said cutter driving motor and said web feeding motor are so set that J_C is smaller than J_F.

4,221,146

TROUGH TO BE USED IN A MICROTOME OR AN ULTRAMICROTOME

Lennart Kindel, Älvsjö, Sweden, and William S. Mansfield, Cambridge, England, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Sep. 5, 1978, Ser. No. 939,235
Claims priority, application Sweden, Sep. 5, 1977, 7709931
Int. Cl.[2] G01N *1/06*
U.S. Cl. 83—167 **3 Claims**



1. In a disposable trough fabricated from a material having low heat-conductivity to be adhesively attached to the knife of a microtome or ultramicrotome to provide a body of liquid for collecting samples as they are sectioned by said knife, said knife having a generally sloping surface intersected by at least one generally vertical side surface extending downwardly from one side of the sloping surface, the improvement which comprises:

two horizontally spaced generally triangular sidewalls, the upper margins thereof to be disposed generally in a horizontal plane;

a third wall connected between said sidewalls adjacent a respective one of the remaining margins of each sidewall;

the other remaining margin of one of the sidewalls and the lower margin of the third wall to be in contact with said sloping surface of the knife;

the other of the sidewalls being provided with a depending flange defining the other remaining margin of the other sidewall;

said depending flange to be placed in abutment against said side surface of the knife;

whereby said trough when in position defines with the sloping surface of the knife an open vessel for liquid for collecting said sectioned sampled.

4,221,147

NIBBLER ACCESSORY FOR MACHINE TOOL

Kunio A. Sumida, 1114 N. Kenter Ave., Los Angeles, Calif. 90049

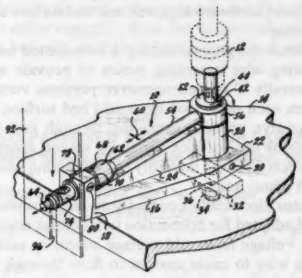
Filed Mar. 5, 1979, Ser. No. 17,442
Int. Cl.[2] B23D *27/00*
U.S. Cl. 83—574 **14 Claims**

1. A nibbler attachment for use with a machine tool of the type having a rotatable chuck member and a bed portion spaced from the rotatable chuck, including

an elongated body member for mounting on the bed portion of the machine tool and for extending at one end from a position adjacent the rotatable chuck to an other end past the edge of the bed portion,

a rotatable eccentric drive member, including first and second oppositely disposed shaft portions and an intermediate eccentric center portion and with the first shaft portion for coupling to the rotatable chuck for producing an eccentric rotary motion of the center portion in accordance with a rotation by the rotatable chuck,

the body member at the end including means for supporting the second shaft portion of the eccentric drive member for rotation,



a nibbler punch and die for producing a cutting action in accordance with relative sliding motion between the punch and die,

the body member at the other end including means for supporting the nibbler punch and die for producing the cutting action at the position past the edge of the bed portion and

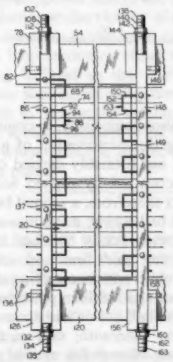
a connecting rod interconnecting the center portion of the eccentric drive and the nibble punch and die for converting the eccentric rotary motion of the center portion to a relative sliding motion between the nibbler punch and die.

4,221,148

HOT WIRE TONGUE AND GROOVE CUTTING APPARATUS

David L. Lewis, 9 Candee Rd., Prospect, Conn. 06712

Filed Mar. 22, 1979, Ser. No. 23,019
Int. Cl.[3] B26F *3/12*
U.S. Cl. 83—869 **17 Claims**



1. A hot-wire cutting apparatus for cutting a plurality of grooves in a foamed synthetic resin workpiece having a first

face and a second, substantially planar, face extending substantially perpendicularly to the first face, comprising:

a. a support structure providing a bed surface that defines a substantially horizontal bed plane;

b. guide means mounted on said support structure adjacent said bed surface and providing a guide surface defining a cutting plane extending at a right angle to said bed plane for guiding the workpiece when its first and second faces are in abutting relationship with said bed and guide surfaces, respectively, said bed surface and said guide surface defining a path of travel in a direction parallel to the line of intersection of said bed plane and said cutting plane;

c. groove-cutting-wire mounting means mounted on said support structure adjacent said bed surface and said guide means;

d. at least one groove-cutting wire mounted on said groove-cutting-wire mounting means to provide a plurality of generally U-shaped operative portions vertically spaced from each other and from said bed surface, each of said operative portions extending through said cutting plane with its leg portions vertically spaced apart and its web portion disposed inwardly of said cutting plane above said bed plane; and

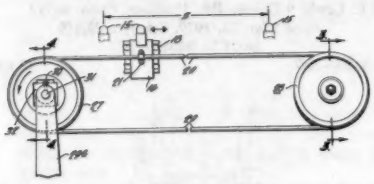
e. means electrically connected to said groove-cutting wire and adapted for connection to a voltage source for applying voltage from said voltage source to said groove-cutting wire to cause current to flow through said groove-cutting-wire operative portions and thereby to heat said operative portions, said operative portions thereby tending to cut vertically spaced grooves extending longitudinally in the direction of said path of travel in the second face of the associated workpiece when the first and second faces of the associated workpiece are in abutting relationship with said bed and guide surfaces, respectively, and the workpiece is moved in the direction of said path of travel past said groove-cutting wires.

4,221,149

DRIVE AND CUTTING MECHANISM

Edward G. Dillinger, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 17, 1978, Ser. No. 961,573
Int. Cl.³ B26D *3/28*
U.S. Cl. 83—870 **7 Claims**



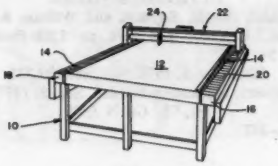
5. A cutting mechanism comprising, in combination: a drive mechanism comprising the combination of a stationary first ball screw, a first ball nut rotatably carried on said first ball screw, a second ball screw axially aligned with said first ball screw and spaced apart therefrom, a second ball nut rotatably carried on said second ball screw, drive means acting on said second ball screw to reciprocally translate said second ball screw, means connecting said first and second ball nuts whereby said first ball nut is reciprocated in response to actuation of said drive means, and a driven pulley mounted on said first ball nut, said second ball nut or said connecting means for rotation and translation therewith; said cutting mechanism additionally including an idler pulley spaced apart from said driven pulley, a rope or the like operatively carried on and connecting said pulleys, and a cutter blade affixed to said rope, whereby said driven pulley reciprocally rotates and translates in response to actuation of said drive means and said blade is reciprocated between said pulleys.

4,221,150

GLASS SCRIBING APPARATUS

Nils H. Bergfelt, Santa Rosa; H. William Bruce, Sebastopol, and Heinz J. Roeser, Santa Rosa, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Nov. 24, 1978, Ser. No. 963,314
Int. Cl.³ B26D *3/08*
U.S. Cl. 83—882 **10 Claims**



1. Apparatus for scribing a planar work piece such as glass plate comprising

a frame,

chuck means mounted on said frame for receiving a work piece,

track means,

a bridge assembly mounted on said track means and moveable thereon, said bridge assembly including a shaft member positioned above said chuck means and moveably mounted in said bridge assembly, scribing means including a first set of scribing devices mounted on one side of said shaft member and a second set of scribing devices mounted on an opposite side of said shaft member whereby said scribing means can be rotated into engagement with a work piece by movement of said shaft member, and means for moving said shaft member in a first direction for rotating said first set of scribing devices into engagement with a work piece and moving said shaft member in a second direction for rotating said second set of scribing means into engagement with a work piece, and drive means for driving bridge assembly on said track means.

4,221,151

STRINGED MUSICAL INSTRUMENT

Thomas G. Barth, P.O. Box 136, Main St., Port Murray, N.J. 07865

Filed Jul. 27, 1979, Ser. No. 61,364
Int. Cl.³ G10D *3/06*
U.S. Cl. 84—314 R **4 Claims**

1. A stringed musical instrument comprising:

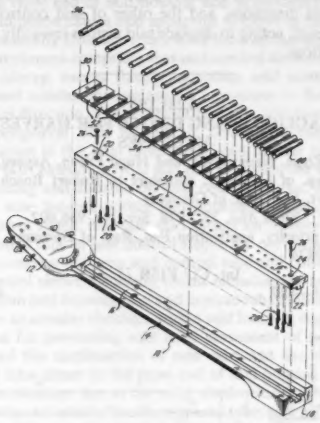
(a) a head having a string slider nut assembly;

(b) a neck having a rectangular slot;

(c) a T-bar assembly having a plurality of holes fastened securely in the rectangular slot of said neck of the instrument;

(d) a fingerboard comprising a plurality of rectangular pieces, forming a plurality of lengthwise-spaced recesses

in which said rectangular pieces are placed adjacent to each other and are placed upon said T-bar assembly;



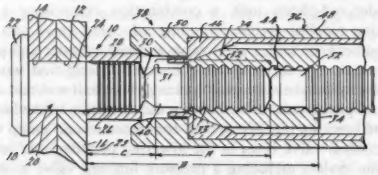
(e) tubular barrel frets, each of said frets having at least two holes, said frets secured firmly in said lengthwise spaced recesses formed in said fingerboard.

4,221,152

TWO PIECE FASTENER INCLUDING A PIN WITH UNDERCUT PINTAIL

Harold C. Jason, Carson, Calif., assignor to Huck Manufacturing Company, Detroit, Mich.

Filed Sep. 13, 1978, Ser. No. 942,029
Int. Cl.² F16B *19/05*
U.S. Cl. 85—7 **9 Claims**



1. A two part fastener for securing a plurality of workpieces together comprising a pin member and a collar member, said pin member being made of an exotic material such as titanium alloy and having an elongated shank portion terminating on one end in an enlarged head, said shank portion having a plurality of lock grooves, a pintail portion and a breakneck groove between said lock grooves and said pintail portion, said pintail portion having a plurality of pulling grooves and a rollback land disposed between and immediately adjacent each of said breakneck groove and said pulling grooves, said collar member being adapted to be located on said shank portion in surrounding relationship with said lock grooves and adapted to be swaged into engagement with said lock grooves by action of a pulling tool, the pulling tool having multitooth jaw means for engaging said pulling grooves and an anvil for engaging and swaging said collar, said jaw means being of a non-self-releasing structure and being actuable from a forwardmost position in which it engages said pulling grooves to a readwardmost position, said collar being swaged by said anvil in response to relative movement of said jaw means from said forwardmost position toward said rearwardmost position, and said pulling tool being further operative in said relative movement to separate said pintail portion from said shank portion at said breakneck groove subsequent to said collar being swaged, said severed pintail being moved at least partially axially through said jaw means in response to application of said jaw means to a pin member of a subsequent fastener and by engagement of its severed end with the shank portion of such pin member of said subsequent fastener, said rollback land having a diameter generally no greater than the root diameter of said pulling grooves and wherein said pintail portion has a maximum length generally defined by the formula $A \leqq B - C$ wherein A is the length of said pintail portion measured from the terminal end thereof to approximately the juncture point between said breakneck groove and said rollback land, B is the distance from the collar engaging sheet line of said workpieces to the most distant pintail engaging portion of said jaw means when said jaw means are in said forwardmost position and said anvil is in initial engagement with said collar member and C is the distance from the collar engaging sheet line to approximately the juncture point between said breakneck groove and said rollback land.

4,221,153

CORRUGATED FASTENER AND STRIP OF FASTENERS

Conrad R. Medina, Skokie, Ill., assignor to Swingline, Inc., New York, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,368
Int. Cl.² F16B *15/00*
U.S. Cl. 85—11 **3 Claims**

1. A corrugated fastener comprising
(1) a curved elongated tensionable section including a curved arcuate member;
(2) intermediate connecting means forming the end portions of said tensionable section;
(3) a pair of loop sections with one portion of each loop attached to each intermediate connecting means and curved in the same general direction as said arcuate member;
(4) a second pair of loop sections attached to the first pair of loop sections, said second pair of loop sections curved in a direction opposite to the first pair of loop sections;
(5) each of said loop sections having one loop portion and two base portions with the base portions substantially in a plane;
(6) the loops of said first pair of loop sections extending a substantial distance to one side of said plane, the loops of said second pair of loop sections extending a substantial distance to the opposite side of the plane and the arcuate member extending to the vicinity of but short of said plane in the same direction as the loops of the first pair;
(7) at least one loop section on either side of the tensionable section being inclined so that during driving the loop section on one side moves away from the loop section on the other side to tension the tensionable section; and
(8) said curved arcuate member being such that its curvature is reducible when tension is applied thereto during driving and when in place.

4,221,154

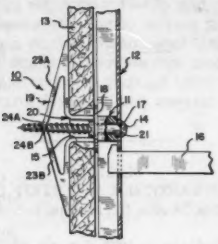
FASTENING ELEMENT WITH ANTI-JACKING DEVICE

Thomas W. McSherry, Floral Park, N.Y., assignor to Mechanical Plastics Corp., Pleasantville, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,133
Int. Cl.² F16B *13/08*
U.S. Cl. 85—80 **7 Claims**

1. A fastening device for fastening together two or more apertured members, at least one of which is concave with respect to the others, said device comprising:
a channeled fastening element for fastening within the aper-

ture of at least one of said apertured members and comprising a channeled and enlarged outwardly flanged head, an expandable locking means, and connecting means extending between the head and the locking means, said head being adapted to abut its flange against the inner surface of said at least one apertured member when the fastening element is fastened within the aperture of said member, said fastening element including, in concentric channel alignment therewith, a channeled and otherwise



solid longitudinally extending anti-jacking member in overlying abutment with the flanged head and substantially extending between the flanged head and said concave member, said anti-jacking member including means for attachment to said fastening element; and

a longitudinally extending elongated retaining element for fastening said concave member to said fastening element by extending through the apertures of said concave member and the anti-jacking member and locking within the channel of the fastening element.

4,221,155

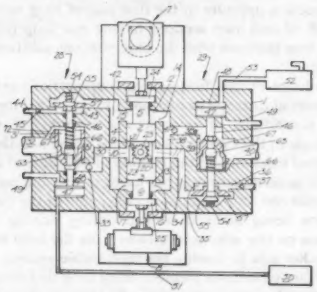
VIBRATION-FREE HYDRAULIC POWER SYSTEM

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Ltd., Columbus, Ohio

Filed May 24, 1978, Ser. No. 909,268

Int. Cl.³ F01B *7/02, 9/00*

U.S. Cl. 91—186 **14 Claims**



1. A fluid power system having a housing reciprocally mounting a work piston having a piston rod projecting outwardly from one side of the housing, said piston rod being adapted to be connected to a mass to be moved, an opposing piston reciprocally mounted in said housing in axial alignment with said work piston, said opposing piston having a piston rod projecting outwardly from the opposite side of said housing adapted to be connected to a reactive mass of a size to counterbalance the mass to be moved, means interconnecting said work piston and said opposing piston for movement in unison in opposite directions, a pair of control valves for selectively supplying fluid under pressure to the opposite sides of said work piston and said opposing piston to move each piston from one end of its stroke to the other, and means for sequentially opening and closing said control valves, one of said control valves, when opened, acting to displace said pistons outwardly in opposite directions, and the other of said control valves, when opened, acting to displace said pistons inwardly in opposite directions.

4,221,156

HYDRAULIC LIFTING DEVICE FOR HARVESTING MACHINES

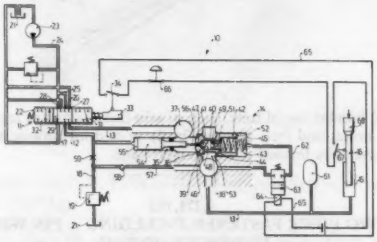
Wilhelm Zirps, Hemmingen, and Hugo Preun, Asperg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,602

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742424

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—407 **6 Claims**



1. In a hydraulic lifting device for a working part of a harvesting machine, including a pump, a tank, a hydraulic cylinder-and-piston unit coupled to said working part to support most of the weight of the latter, a multiway control valve for selectively controlling the lifting and lowering positions of said cylinder-and-piston unit, a combination comprising a first working pipeline system including a locking valve unit connected between said control valve and said cylinder-and-piston unit; an energy accumulator connected to said first working pipeline system between said locking valve unit and said cylinder-and-piston unit for cushioning the operation of the latter; a second working pipeline system connected to said pump when said control valve is set in the lowering position, said second pipeline system including a pressure limiting valve arranged between said control valve and said tank for setting a control pressure for said locking valve unit, and a cross conduit including a non-return valve connected between said pressure limiting valve and said cylinder-and-piston unit to safeguard the lifting position of the latter.

4,221,157

PNEUMATICALLY OPERATED PERCUSSION BORING APPARATUS

Paul Schmidt, Winterberger Str. 70, Lennestadt 14, Fed. Rep. of Germany (5940)

Filed Jul. 6, 1977, Ser. No. 813,238

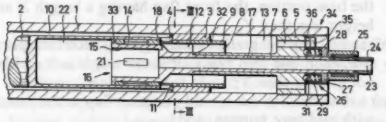
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 2634066

Int. Cl.² F15B *13/04, 15/17*

U.S. Cl. 91—416 **12 Claims**

1. In a self-propelled pneumatically operated percussion boring apparatus for boring holes in the ground, said apparatus including an axially extending tubular housing having a front end and a rear end spaced axially from the front end, a percussion piston located within and displaceable in the axial direction of said housing and including a portion in sliding sealing engagement with said housing, means for pneumatically reciprocating said piston in said housing including a control device

for controlling the supply of air within said housing selectively along either one of two paths, in one of which paths said piston causes said apparatus to move in the axial direction outwardly from the front end of said housing and in the other of which paths said piston causes said apparatus to move in the opposite direction axially from the rear end of the said housing wherein the improvement comprises that said control device includes a control sleeve, means fixedly mounting said control sleeve within said tubular housing against movement in the axial and rotational direction of said tubular housing, said sleeve including a peripheral wall having air flow ports therethrough spaced apart in the axial direction of said tubular housing, an annular skirt extending from said piston toward the rear end of said housing and slidable on said control sleeve, a rotatable control tube located within said housing extending through said control sleeve into said skirt means for fixedly mounting said control tube in said control sleeve for preventing relative axial movement between said control tube and control sleeve, said control sleeve mounting means including an annular and face within said housing, and said control tube mounting means includes an annular shoulder within said housing engaging said end face for preventing said axial movement of said control tube, and the combination of said skirt and the end of said control tube closer to the front end of said housing defining a variable chamber due to the axial displacement of said piston relative to said axially fixedly mounted tube, said piston having a first surface within said chamber therein extending transversely of the axial direction of said tubular housing and acted on by the compressed air for moving said piston along the one of said paths and having a second surface extending transversely of the axial direction of said tubular housing and whose area is greater than the first surface and is located exteriorly of



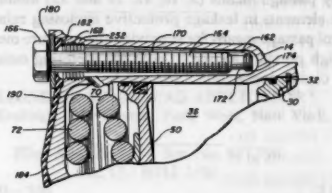
said chamber and when acted on by the compressed air moves said piston along the other of said paths, said skirt having ports extending therethrough, said ports in said skirt moving into and out of register with said ports through said wall of said control sleeve and with the chamber within said skirt of said piston as said piston reciprocates in said housing, said control tube including an axially extending tubular wall, said tubular wall in said control tube having at least one air flow port therethrough, means for supplying compressed air to said control tube, said means for supplying compressed air comprising a compressed air hose connected to said control tube so that rotating said compressed air hose effects a corresponding rotation of said control tube, and said control tube being rotatably mounted within said skirt of said piston about the axis of said housing between a first position and a second position, whereby when said control tube is in said first position, said at least one port through said tubular wall of said control tube is out of register with said ports through said wall of said control sleeve closer to the front end of said housing and compressed air flows from said control tube into said chamber within said skirt in said piston along the one of the paths through said apparatus and causes said piston to move said apparatus in the direction outwardly from the front end of said housing while air flows from adjacent said second surface to exhaust via an air flow port in said skirt and when said control tube is rotated relative to said control sleeve and said skirt of said piston into said second position, said at least one port through said wall of said control tube is in register with at least one of said ports through said wall of said sleeve closer to the front end of said housing and the compressed air flows from said control tube outwardly from said chamber along the other of the paths through said apparatus and acts on the second surface of said piston while concurrently acting on said first surface and causes said piston to move said apparatus in the direction opposite and axially outwardly from the rear end of said housing.

4,221,158

PNEUMATIC ACTUATOR

Boleslaw M. Klimek, Des Plaines, Ill., and Sergio Campanini, Iola, Kans., assignors to The Echlin Manufacturing Company, Branford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,583
Int. Cl.³ F01B *31/00*; F15B *13/042*
U.S. Cl. 91—440 **17 Claims**



1. A pneumatic actuator comprising:

a housing including a first cavity, an aperture open to said first cavity, and a second cavity extending generally longitudinally of said housing and open at one end;

a piston mounted for reciprocal movement within said first cavity, said piston forming a first chamber on one side of said piston and a second chamber on the other side of said piston within said first cavity, said second cavity being in communication with said first and second chambers;

spring means within said first chamber for urging said piston in a predetermined direction; and

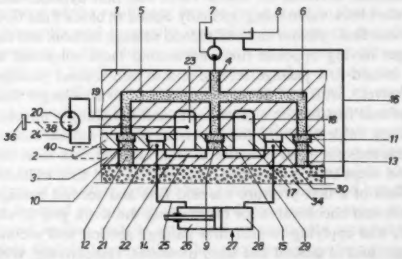
means normally mounted within said second cavity for selectively sealing said open end of said second cavity while permitting communication between said first and second chambers and including means for cooperatively operating with said spring means upon removal of said mounted means from said second cavity and insertion through said aperture to selectively control the effect of said spring means upon said piston.

4,221,159

PRESSURE MEDIUM CONTROL DEVICE FOR HYDROSTATIC STEERING SYSTEMS OF MOTOR VEHICLES

Karl-Heinz Liebert, Schwaebisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 2, 1978, Ser. No. 957,287
Int. Cl.³ F15B *11/08*
U.S. Cl. 91—467 **5 Claims**



1. In combination with a hydrostatic steering system or the like having a high pressure source (7), manually operated metering means (20), a servomotor (27) and a reservoir (8) for

a pressure medium; a pressure control device, comprising a housing (1), a radially outer valve element (2) mounted in said housing, a radially inner valve element (3) slidably mounted within and axially displaceable relative to said outer valve element against a return bias from a neutral position in which a short circuit connection (10-12, 11-13) is established between the high pressure source and the reservoir, control passage means (21, 30) in the outer valve element and the inner valve element for establishing fluid communication between said metering means and the servomotor in response to displacement of the inner valve element from said neutral position, and supply passage means (9, 10, 11, 14 and 15) mounted by the valve elements in leakage protective enclosing relation to the control passage means for supplying the pressure medium from the high pressure source to both the metering means and the short circuit connection.

4,221,160

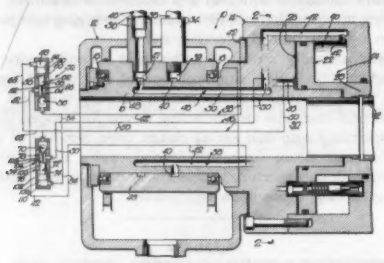
FLUID OPERATING MECHANISM FOR A ROTARY CHUCK

Boynton Selden, West Hartford, Conn., assignor to Cushman Industries, Incorporated, Hartford, Conn.

Continuation of Ser. No. 747,816, Dec. 6, 1976, abandoned. This application Sep. 26, 1978, Ser. No. 945,956

Int. Cl.³ B23B *31/30*; F15B *13/042*

U.S. Cl. 91—471 **7 Claims**



1. In a method of relaxing the work grip of a chuck operated by mechanism having a cylinder in which a piston defines first chuck-closing and second chuck-opening ends, first and second fluid passages leading to said first and second cylinder ends, respectively, a check valve and a plunger, of which the check valve is interposed in said first passage and divides the same into first and second sections of which said second section extends between the check valve and first cylinder end, with the check valve being normally closed to block fluid flow from said first cylinder end and second passage section, and the plunger having opposite first and second faces subjected to fluid in said first passage section and in said second passage, respectively, with said second face being of an area larger than that of said first face at a given ratio, and the plunger opening the check valve when the total pressure of fluid on said second face exceeds the total pressure of fluid on said first face, the method steps which comprise, applying to said first cylinder end fluid of a first pressure via said first and second passage sections and check valve for maintaining the work grip of the chuck, and applying to said first passage section and second passage fluid of second and third pressures, respectively, with said second and third pressures being lower than said first pressure and being of a ratio smaller than said area ratio, so that the check valve will be opened to blend said first and second pressures for work grip relaxation.

4,221,161

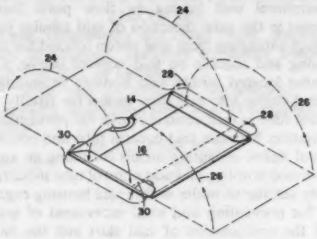
METHOD OF FORMING A DOUBLE POCKET ENVELOPE

Hampton L. Hurt, Tulsa, Okla., assignor to Frank D. Stroud, Tulsa, Okla., a part interest

Filed Jul. 5, 1978, Ser. No. 921,892

Int. Cl.³ B65D *27/08*

U.S. Cl. 93—1 R **2 Claims**



1. A method of forming a double pocket envelope from a single sheet, comprising the steps of:

(1) cutting a flat sheet to the following outline:

(a) a rectangular base portion having a length X between opposed ends and a height Y between opposed sides,

(b) a partition flap integrally extending from one side of the base portion, the partition flap having a length X and a height less than Y,

(c) a front flap integrally extending from the other side of the base portion, the front flap having a length X and a height less than Y,

(d) an end flap integrally extending from each base portion end, each end flap being of short width and of length not greater than Y;

(e) a thumb notch cut in said partition flap at the juncture with said base portion, and

(f) a thumb notch cut in said base portion at the juncture with said partition portion, the thumb notch cuts being out-of-register with each other;

(2) folding said partition flap against said base portion;

(3) folding said front flap against said partition flap whereby said partition flap lies between said base portion and said front flap, and a portion of said partition flap adjacent the juncture with said base portion is exposed;

(4) folding said end flaps over said front flap and the exposed portion of said partition flap;

(5) cementing said end flaps to said front flaps and the exposed portion of said partition flap;

(6) cutting the full length of said partition flap and said base portion at the folded juncture thereof providing a first envelope area between said base portion and said partition flap and a second envelope area between said partition flap and said front flap; and

(7) removing the portions defined by the thumb notch cuts thereby providing notches which make it easier to separate the partition flap and base portion.

4,221,162

CARTON BOTTOM TUCKING AND TACKING APPARATUS FOR PACKAGING MACHINES

Ivan L. Kauffman, Commerce Township, Oakland County and Robert J. Allen, Farmington, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jan. 19, 1979, Ser. No. 4,932

Int. Cl.³ B31B *1/32*

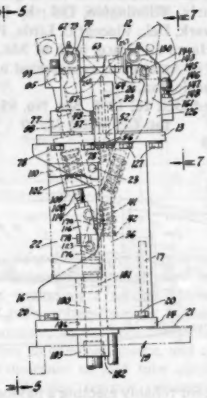
U.S. Cl. 93—36.8 **11 Claims**

1. A carton bottom tucker-tacker assembly for use in a packaging machine for forming, filling and closing cartons, and wherein said packaging machine includes at least two carton mandrels for holding a pair of cartons in side-by-side positions

for forming the bottom ends of the pair of cartons after said bottom ends have been heated, characterized in that the tucker-tacker assembly includes:

(a) a tucker apparatus operatively mounted at a carton bottom forming station in the packaging machine beneath said pair of cartons for simultaneous engagement with the bottom closure members of said pair of cartons retained on the pair of carton mandrels for breaking and partially folding the same toward a closed position;

(b) a tucker jaw swingably mounted at said carton bottom forming station beneath said pair of cartons for engaging



simultaneously the partially closed bottom closure members of said pair of cartons and moving the tuck-in panel members thereof toward closed positions;

(c) a tacker jaw swingably mounted at said carton bottom forming station beneath said pair of cartons for engaging simultaneously the partially closed bottom closure members of said pair of cartons and moving the tuck-over panel members thereof toward closed positions and tacking the closed bottom closure members in place; and

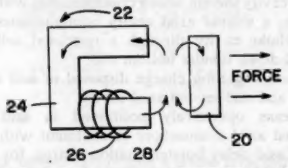
(d) power drive means for operating the tucker apparatus, tucker jaw and tacker jaw.

4,221,163

MAGNETIC HYSTERESIS DRIVEN RECORDING ELEMENT AND METHOD

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 1, 1978, Ser. No. 939,160
Int. Cl.³ B41J *9/02*
U.S. Cl. 101—93.01 **16 Claims**



1. A system for cyclic operation of a recording member comprising:

means for generating a magnetic flux in a predetermined direction, said recording member being adjacent said generating means for receiving the effect of said magnetic flux in a magnitude to saturate the material in said recording member and retain a magnetic polarity therein in said direction and to cause said recording member to be moved toward said generating means, and

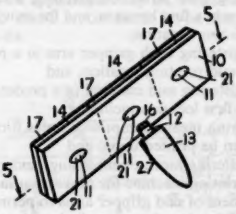
switching means for reversing the magnetic flux in the opposite direction and in a magnitude causing a time-delayed change in polarity of said recording member and causing said recording member to move away from said generating means, the magnitude of said reversed flux then causing said polarity to be realigned with said magnetic flux to cause said recording member to be moved again toward said generating means.

4,221,164

MAGNETIC STAMP PAD APPLICATOR

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed Aug. 29, 1978, Ser. No. 937,796
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—109 **1 Claim**



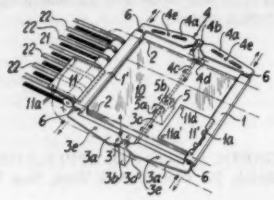
1. A stamp pad applicator comprising an applicator handle having a first end having a magnet fastened thereto, an oblong plate having a plurality of openings and small magnets partially affixed in and projecting above one surface, a plurality of sections removably attached to said one surface of said oblong plate, each section having an opening in the middle thereof aligned with one of said openings in said oblong plate, each said section having small openings extending therethrough to a magnetically attractable flat plate, said small openings receiving the projections of said small magnets, said sections having combined dimensions approximately matching the dimensions of said oblong plate, a first side of each section being adapted to be removably attached to said oblong plate, a second side of each section opposite said first side having said magnetically attractable flat plate retained on said second side by said small magnets and covering said second side and the opening in that section, flexible magnetic stamping material removably adhering to the surface of the magnetically attractable flat plate that is opposite to the surface which contacts said second side, said first end of the applicator handle being sized so that it may be frictionally and manually insertable into any of the aligned openings in the oblong plate and one of said sections, said applicator handle having a flange spaced from said end by a distance sufficient to permit the magnet carried by said first end to be inserted into a pair of aligned openings and magnetically engage the magnetically attractable flat plate covering that section's opening and move the engaged section relative to the remaining sections whereby with the oblong plate and the edges of the other sections being manually held said handle can be inserted in any pair of aligned openings to move the engaged section and its associated magnetically attachable flat plate slightly beyond the other sections before being stamped on an ink pad, and whereby said small magnets when inserted into said small openings magnetically retaining the fastened back of said flat plates to removably hold the sections to the oblong plate.

4,221,165

PRINTING MACHINE HAVING REGISTERING MEANS

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Nov. 23, 1977, Ser. No. 854,200
Claims priority, application Sweden, Nov. 24, 1976, 7613138
Int. Cl.[2] B05C 17/06
U.S. Cl. 101—126 5 Claims



1. A printing machine, such as a silkscreen printing machine, comprising:

a plurality of gripper arms for gripping a material to be printed upon in a first location, and for moving said material to a printing location;

means for registering each gripper arm in a predetermined position at said printing location; and

means for registering said material in a predetermined position at said first location including:

first registering means comprising holes formed in in the material to be printed upon, and

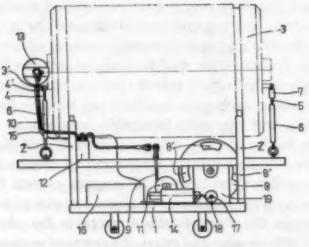
second registering means, comprising guide pins mounted on said printing machine for movement in the direction of movement of said gripper arms to permit adjustment of the guide pins, for operatively engaging said first registering means to register said material in said predetermined position.

4,221,166

DEVICE FOR ANCHORING A BUOYANT MINE AT A PRESET DEPTH

Jan Björk, Bjärred; Jan T. Olsson, Landskrona, and Bengt M. Holmberg, Bjärred, all of Sweden, assignors to SAB Industri AB, Malmo, Sweden

Filed Oct. 6, 1978, Ser. No. 949,020
Claims priority, application Sweden, Oct. 7, 1977, 7711274
Int. Cl.[2] F42B 22/10
U.S. Cl. 102—13 3 Claims



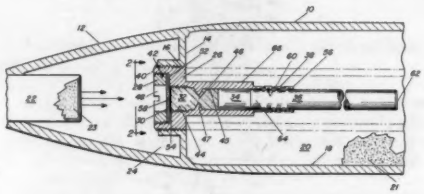
1. A device for anchoring a buoyant mine at a predetermined depth under a surface of a body of water comprising in combination, a mine anchor provided with a rotatable wire drum, a mine anchoring wire reelably wound within the drum for anchoring said mine, said wire being connected to said mine and adapted for being played out upon rotation of said drum, the mine and mine anchor being sinkable together but adapted to disconnect after reaching the bottom of said body of water with said mine being buoyantly ascendable in said body of water, a contact manometer connected to the mine for giving an electrical signal when the predetermined depth is reached, a signal line connected between the mine and the mine anchor for transmitting the signal from the manometer to the mine anchor, and an electrically activated exploding device disposed on the mine anchor and actuatable at the occurrence of said signal for positively locking the wire drum against further rotation.

4,221,167

DELAY BURSTER FOR A PROJECTILE

Aaron S. Berlin, deceased, late of Wilmington, Del.; by Sara L. Berlin, executrix, Wilmington, Del.; by Howard M. Berlin, executor, Newark, Del.; Vincent C. Little, Fallston, and Toney E. Leadore, Havre de Grace, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 16, 1978, Ser. No. 951,550
Int. Cl.[3] F42B 13/50
U.S. Cl. 102—69 9 Claims



1. A projectile for reliably ejecting a payload from a canister over a selected target area which comprises:

a tubularly shaped projectile housing having a forward ogive end, a main cylindrical cargo cavity, and transverse bulkhead means fixedly positioned intermediate said ogive end and said main cargo cavity;

canister means operatively disposed within said main cargo cavity for holding said payload until said payload is released from said canister means over said target area;

expulsion-initiating charge means, axially positioned in said ogive forward end, for simultaneously ejecting said canister means and initiating the opening of said canister means when said projectile is over said target area; and

delay burster means, operatively disposed in said bulkhead means in axial alignment with said expulsion-initiating charge means, adapted to be initiated by said expulsion-initiating charge without being blown away and for opening said canister means after said canister means has ejected from said projectile, which includes;

a tubularly shaped housing member having an externally threaded front end fixedly attached to said bulkhead means, said front end having an internally threaded axial counterbore, a tubular midsection having and an axial choke cavity therein which communicates with said counterbore, a second axial cavity communicates with said axial choke cavity through a restricted orifice, and a necked-down tubular bottom end;

delay burster ignition charge disposed in said axial choke cavity and said second axial cavity;

filter means operatively positioned in said internally threaded axial counterbore in abutment with a forward end of said delay burster ignition charge, for preventing said delay burster ignition charge from being blow out of said delay burster means and from being eroded away by said high pressure gases of said expulsion-initiating charge means;

retainer means threadedly screwed into said internally threaded axial counterbore for holding said filter screen means fixedly against a front end of said delay burster ignition charge;

a detonator disposed in a rear end of said tubular midsection

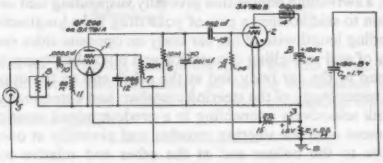
having a forward end in abutment with a rear end of said delay burster ignition charge; and

a length of primacord having a front end operatively crimped to said necked down tubular bottom end of said tubularly shaped housing member.

4,221,168
CONDENSER POWERED FUZE

Seth H. Neddermeyer, 9508 44th Ave., N. E., Seattle, Wash., 98115 and Robert A. Becker, Physics Dept., University of Illinois, Urbana, Ill. 60612

Filed Jan. 15, 1948, Ser. No. 2,534
Int. Cl.³ F42C *13/00*
U.S. Cl. 102—211 **3 Claims**

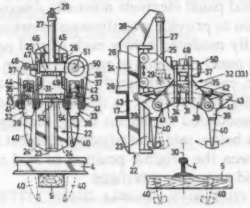


1. In a proximity fuze comprising a target-responsive circuit including a first electronic grid controlled tube and a squib detonating circuit including a second electronic grid controlled tube; a B tube voltage supply for said tube circuits comprising a condenser, an external connection for charging said condenser from an external source, and circuit means for connecting said condenser to said tube circuits, said circuit means including a biasing resistor connected between the minus terminal of said condenser and the cathode of said first grid controlled tube, a second biasing resistor connected between the grid of the second grid controlled tube and the minus terminal of said condenser whereby when the B drain of the said fuze exceeds a predetermined level, the bias on said second grid controlled tube is reduced to the firing point, thereby igniting said squib.

4,221,169
TRACK TAMPER

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 28, 1978, Ser. No. 974,093
Claims priority, application Austria, Jan. 23, 1978, 477/78
Int. Cl.² E01B *27/16*
U.S. Cl. 104—12 **9 Claims**



1. A track tamper comprising a frame arranged on a track consisting of a multiplicity of cross ties and two rails fastened to the cross ties, and a tamping head vertically movably mounted on the frame for vertical alignment with a respective one of the rails, the tamping head including

(a) a pair of ballast tamping tool implements arranged for reciprocation in the direction of track elongation towards and away from each other, each of the implements including

(1) a rigid mounting support comprised of a vertically extending support arm substantially in vertical alignment with the respective rail and mounted for pivoting about an axis extending in the direction of the cross ties,

(2) a pair of wings extending transversely of the track substantially symmetrically with respect to the support arm, and

(3) a tamping tool mounted on each of the wings and capable of tamping ballast under respective ones of the cross ties upon vertical movement of the tamping head and immersion of the tamping tools in the ballast adjacent the respective ties,

(b) a single reciprocating drive for pivoting the support arms of the pair of tamping tool implements, and

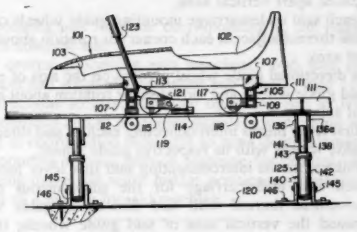
(c) a vibrating drive,

(1) the reciprocating drive being respectively connected to one of the support arms by means of the vibrating drive and being linked directly to the other support arm.

4,221,170
MONORAIL MOUNTAIN SLIDE

Slavos Koudelka, East Ridge Rd., Warwick, N.Y. 10990

Continuation-in-part of Ser. No. 788,129, Apr. 18, 1977, abandoned. This application May 30, 1978, Ser. No. 910,469
Int. Cl.² A63G *21/04*; B61B *13/04*; E01B *25/08*
U.S. Cl. 104—63 **7 Claims**



1. A monorail mountain slide including a mountain coaster and a monorail for recreational transportation along an inclined path on a hill, comprising: a monorail channel track disposed along and spaced from the path said channel having a bottom portion and side portions; a chassis frame movable along said channel and comprising a central elongate longitudinal support member and front and rear transverse support members at the respective ends of the longitudinal member and extending beyond the respective said sides of said channel; a coaster shell resiliently mounted on said chassis frame; first roller means mounted on said rear transverse support member engaging said channel bottom portion; a bracket pivotally mounted on said longitudinal member rearwardly of said front transverse support member; second roller means mounted to one end of said bracket and arranged to selectively engage said channel bottom portion; first brake means mounted to an end of said bracket opposite said one end and positioned to selectively engage said channel bottom portion; drag brake means affixed to the bottom of said front transverse support member; lever actuating means mounted on said bracket and movable from a first normal, neutral rest position, wherein both said first brake means and said drag brake means are engaged with said channel bottom portion, to a second position, wherein said first brake means are forcefully engaged with said channel bottom portion, and to a third position wherein both said brake means are disengaged from said channel bottom portion and said second roller means are engaged therewith so that said chassis frame and coaster may move along said track; and retaining means depending from the respective ends of both said transverse support members, said retaining means being engaged with said channel to restrain lateral and vertical movement of said chassis frame with respect to said track.

4,221,171
DIRECTION SHIFT CONTROL FOR CONNECTED VEHICLE UNDERCARRIAGES

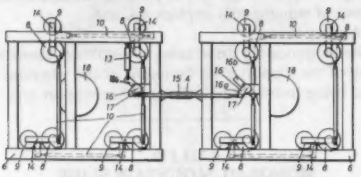
Heinz Flaig, Bochum; Martin Middeldorf, Waltrop, and Udo Dietrich, Gevelsberg, all of Fed. Rep. of Germany, assignors to DEMAG, A.G., Duesseldorf, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 924,948

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733373

Int. Cl.[2] E01B *25/28*

U.S. Cl. 104—130 **4 Claims**



1. In a direction control system for a railway vehicle, comprising

(a) a front undercarriage and a rear undercarriage, with each undercarriage pivotally mounted on said vehicle on spaced apart vertical axes;

(b) each said undercarriage mounting guide wheels on each side thereof adjacent each corner for rotation about vertical axes;

(c) a directional guide wheel pivoted on the axis of each of said guide wheels and mounted for rotation about a vertical axis;

(d) first lever means interconnecting each of said directional guide wheels with its respective guide wheel;

(e) linkage means interconnecting said first lever means on each said undercarriage for the simultaneous pivotal movement thereof with said directional guide wheels around the vertical axes of said guide wheels; the improvement characterized by

(f) connecting means connecting said linkage means of each of said front and rear undercarriages;

(g) said connecting means including a second lever positioned on each said undercarriage and connected to said linkage means, and a rod interconnecting said second levers; and

(h) said connecting means causing all said directional guide wheels of said front and rear undercarriages to pivot from one position to another simultaneously.

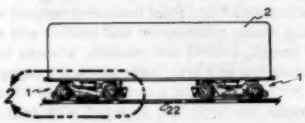
4,221,172
ARTICULATED RAILWAY TRUCK

George Sobolewski, Laval West, Canada, assignor to Canadair Limited, Montreal, Canada

Filed Mar. 27, 1978, Ser. No. 890,318

Int. Cl.[2] B61F *3/08, 5/22, 5/44*

U.S. Cl. 105—168 **8 Claims**



1. A railway truck assembly to carry one end of a car body and comprising: a bolster defining opposite ends operatively aligned transversely relative to the car body; bolster drag links operatively connecting the opposite ends of the bolster to the railway car body to prevent a relative yawing motion; a pair of spring suspensions positioned on the opposite ends of the bolster and operatively carrying the corresponding end of the car body; a pair of wheel axles including an inboard and an outboard wheel axles defined by the corresponding inboard and outboard positions thereof respectively relative to the car body; an inboard and an outboard steering yokes rotatively holding the inboard and outboard wheel axles respectively and pivoted in yaw one to the other at a point intermediate the wheel axles; a pair of side frames positioned at the opposite ends respectively of the bolster and having opposite ends resting onto said yokes respectively; pivot means pivotally connecting one end of each side frame on one of said yokes; lateral link means pivotally connecting and laterally restraining each side frame relative to each yoke and to the bolster; a steering crossbar and cooperatively and entirely transmitting all the longitudinal loads between the car body and the yokes having a central portion pivotally connected to the outboard yoke; a swivelling connection pivotally suspending said central portion to said bolster; a pair of yoke drag links longitudinally extending lengthwise of the car body on opposite sides respectively of said swivelling connection and pivotally connected at one end to the car body and at the other end to the opposite ends respectively of the steering crossbar; and a steering actuator link selectively connecting in a predetermined position of alignment with the steering crossbar and pivotally at one end relative to the bolster and at the other end relative to the steering crossbar, thereby allowing mere lateral motions of the car body to substantially produce no relative translation motion of the steering crossbar endwise transversely of the car body.

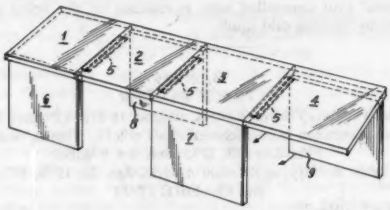
4,221,173
CONVERTIBLE FURNITURE

Carl C. Sanford, Jr., Rockville, Md., assignor to Victoria Miller, Bethesda, Md.

Filed Aug. 29, 1978, Ser. No. 937,782

Int. Cl.[2] A47B *3/00*

U.S. Cl. 108—113 **7 Claims**



1. An article of convertible furniture comprising a plurality of interconnected panel elements normally disposed in aligned coplanar relation to provide a continuous tabletop surface, and leg means fixedly mounted below each of said panel elements to support said panel elements in spaced relation above a supporting surface, each of said panel elements being adapted to fold downwardly with respect to the next adjacent panel element with its associated leg means being thereby moved to a nesting position below said next adjacent element and spanning the space between the original position of said next adjacent element and said supporting surface.

4,221,174
DIRECT IGNITION OF A FLUCTUATING FUEL STREAM

Donald A. Smith, Haddam, and Richard C. LaFlesh, Enfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

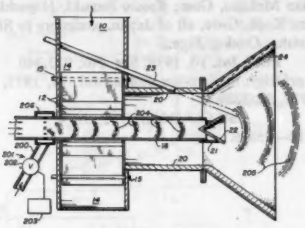
Filed May 16, 1978, Ser. No. 906,689

Int. Cl.[3] F23C *11/00*; F23D *1/00*

U.S. Cl. 110—265 **24 Claims**

1. An apparatus for causing ignition and sustaining combustion of pulverized coal in a combustion area including: means for forming a fuel stream comprising a dense phase mixture of

pulverized coal and air; means for injecting a gas into the fuel stream to cause a periodic variation in the density of said fuel stream; means for introducing the varying density fuel stream into the combustion area; an ignitor positioned in the combus-



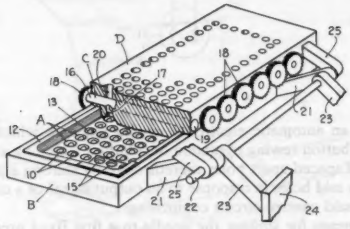
tion area for delivering ignition energy to the fuel stream; and means for delivering secondary air to the combustion area coaxially of the fuel stream to support combustion thereof subsequent to ignition.

4,221,175

APPARATUS AND METHOD FOR PLANTING SEED

Aart Van Wingerden, R.R. 2, Fletcher, N.C. 28732, and Tom Visser, Post Box 5103, 's=Gravendeel, Netherlands

Filed Nov. 2, 1978, Ser. No. 957,180
Int. Cl.³ A01C *7/04*
U.S. Cl. 111—1 **4 Claims**



1. The method of planting seeds and the like into a seed growing medium comprising the steps of:
segregating and spacing seeds from one another in a tray containing spaced cells;
placing the tray in an apparatus for planting seeds into a growing medium;
opening the cells from the top thereof;
inverting the tray;
feeding the seeds from the cells; and
guiding and spreading the seeds by gravity to said growing medium extending over a larger area than that occupied by the cells.

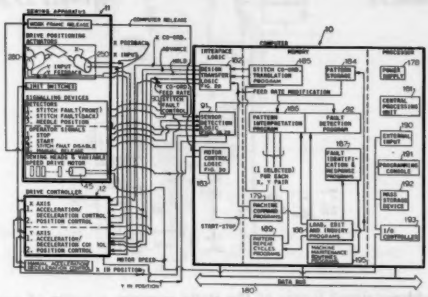
4,221,176

PROFILE STITCHING APPARATUS AND METHOD

Calvin H. Besore, Mount Airy, N.C., and Charles J. Wampler, deceased, late of Mount Airy, N.C. (by Rebecca R. Wampler, administratrix), assignors to Quality Mills, Inc., Mount Airy, N.C.

Filed Jul. 14, 1978, Ser. No. 924,692
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.12 **75 Claims**

27. A control system adapted for controlling an automatic sewing machine with a needle, digital signal controllable needle drive, work holder and digital signal controllable work holder positioners and needle positioning and work holder positioning signaling devices productive of signals indicative of successive positions obtained by the needle and work holder in the course of executing a pattern, said system comprising:
(a) circuit means having interface logic and memory including means for receiving needle and work holder position signals singularly or plurally, stored digital program logic adapted for analyzing the relation between the signals themselves and between the signals and other digital data including pattern data stored in said program logic and means for developing a central processing unit digital control instruction sequence therefrom to define a central



processing unit response corresponding to the results of such analysis; and
(b) a central processing unit associated with said circuit means and adapted to serialize and execute said control instructions to direct its own operation and to control recognition and to recognize signals in said circuit means and in coordination therewith to issue digital signals corresponding to said defined response for control of said needle drive and work holder positioners during execution of a pattern by said machine.

4,221,177

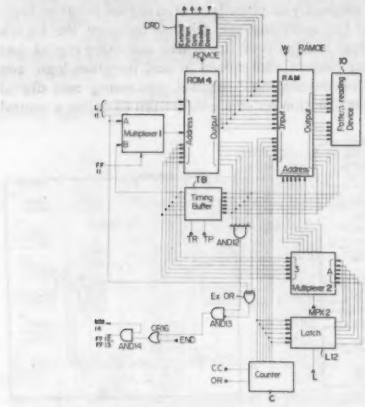
SEWING MACHINE WITH STITCH-PATTERN CONTROL CIRCUITRY

Hachiro Makabe, Fussa; Kazuo Watanabe; Hideaki Takenoya, both of Hachioji; Toshihide Kakinuma, Tokyo, and Toshiaki Kume, Tachikawa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 876,328, Feb. 8, 1978, abandoned, which is a continuation of Ser. No. 715,691, Aug. 19, 1976, Pat. No. 4,086,862. This application Jul. 20, 1978, Ser. No. 926,627
Claims priority, application Japan, Oct. 17, 1975, 50-124306
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 E **7 Claims**

1. In a sewing machine, an arrangement for forming patterns made up of stitches, comprising, in combination, a first memory having a plurality of outputs; a second memory having a plurality of inputs connected to the outputs of the first memory and having a plurality of outputs, at least one of said first and second memory being a static memory having a plurality of address signal inputs and comprised of a plurality of storage units addressable by address signals applied to the address signal inputs thereof; stitch-forming means provided with a plurality of stitch control signal inputs connected to the outputs of the second memory and operative for producing any of a plurality of different stitches in dependence upon the signals produced at the outputs of the second memory; and information-transfer means connected to the first and second memories, operative for reading out information from the first memory and writing such information into the second memory not in synchronism with operation of the stitch-forming means, and thereafter operative for reading out information from the second memory and transferring such information to the stitch-forming means in synchronism with operation of the

stitch-forming means, the information-transfer means including control means operative when activated for effecting the read-out of information from the static memory by applying to the



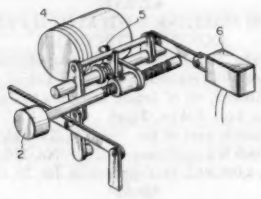
address signal inputs of the static memory a series of next-address signals derived from signals produced at the outputs of the static memory.

4,221,178

SEWING MACHINE WITH CAM SELECTING DEVICE

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 924,204
Claims priority, application Japan, Jul. 19, 1977, 52-85593
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **3 Claims**



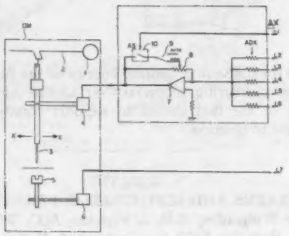
1. A sewing machine with a group of cams each configured in accordance with a respective stitch pattern, in combination, a cam follower mounted to shift along the group of cams, the cam follower also being mounted for movement between an engaged position engaging one of the cams and a disengaged position not engaging any of the cams, manually powered means used by the operator for manually shifting the cam follower from one cam of the group of cams to another as desired, the manually powered means including a selector member moved by the user of the machine, the manually applied force exerted by the user to move the selector member effecting the shifting of the cam follower, the selector member being provided with touch-responsive means operative for generating a touch-responsive signal when the selector member is being touched by the user preliminary to and during manual movement of the selector member by the user, and means responding to the touch-responsive signal by moving the cam follower from the engaged to the disengaged position, whereby when the user touches the selector member preparatory to changing the setting of the selector member the cam follower is automatically disengaged before the user begins to perform manual shifting of the cam follower.

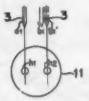
4,221,179

BUTTON SIZE CONTROL IN AN AUTOMATIC ELECTRONIC SEWING MACHINE

Nobuyoshi Miyao, Sakurai; Hirotoshi Matsui, Shiki; Nobukazu Isoyama, Sakurai; Susumu Nonaka, Yamatokoriyama; Masayasu Makino, Gose; Kazuo Suzuki, Higashiosaka, and Hirokazu Koda, Gose, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,340
Claims priority, application Japan, Jul. 13, 1977, 52/83886; Jul. 13, 1977, 52/83887
Int. Cl.[2] D05B *3/02, 3/14*
U.S. Cl. 112—158 E **8 Claims**





1. In an automatic electronic sewing machine which performs a button sewing operation on a button including at least a pair of spaced apart holes therethrough by shifting a needle between said holes in response to an output signal of a control circuit, said control circuit comprising:

first means for shifting the needle to a first fixed predetermined position corresponding to one hole formed in said button;

second means for shifting the needle to a second position corresponding to another hole formed in said button; and

modification means for varying the distance shifted by said needle from said first fixed predetermined position to the second position in response to the distance between the spaced apart holes in the button.

4,221,180

COMPACT UPPER THREAD TENSION DEVICE

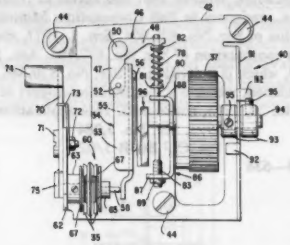
Lionel J. Coulombe, Matawan, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 21, 1977, Ser. No. 835,384
Int. Cl.[3] D05B *47/00*
U.S. Cl. 112—254 **4 Claims**

1. A thread tensioning arrangement for a sewing machine having a frame, said tensioning arrangement having at least two discs arranged in contiguity with each other and adapted to receive a thread therebetween for imparting resistance to movement of the thread, means for transferring force normal to said discs to press said discs together, and a fulcrum tension device comprising:

a tension beam having first and second ends, said second end being operatively connected to said force transferring means; means connected to said first end of said tension beam for imparting a force thereto; and variable means for selectively variably pivoting said tension beam for selectively variable transfer of moment thereby, said variable

pivoting means being rotatable in a plane parallel to said tension beam and having a point of contact selectively



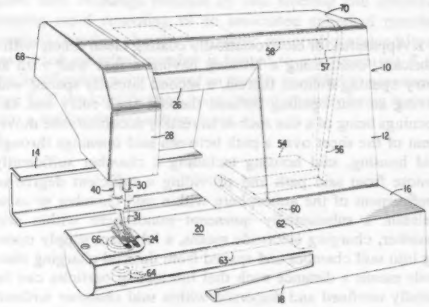
variable on rotation thereof with said tension beam in opposition to said force imparting means.

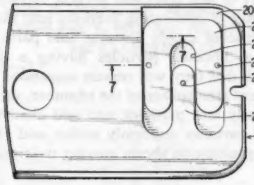
4,221,181

THROAT PLATE FOR ABOVE THE BED FEED SYSTEM

Peter J. Totino, North Bergen, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,563
Int. Cl.[2] **D05B** *27/00, 35/00*
U.S. Cl. 112—311 **5 Claims**





1. A sewing machine having a frame including a bed, a standard rising from said bed, a bracket arm supported by said standard overhanging said bed, said bed supporting internally thereof a looptaker, said bracket arm supporting an endwise reciprocating sewing needle and an above the bed feeding system having means for alternately clamping the work material against the thrust of the sewing needle and for unclamping and feeding the work material, said sewing needle cooperating with said looptaker in the formation of stitches; the improvement which comprises:

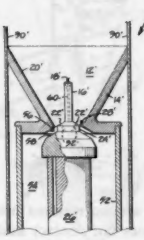
a throat plate having an aperture for permitting passage of said needle to said looptaker, a portion of said throat plate surrounding said aperture receiving the thrust of said work clamping means, and a feed plate movably supported by said throat plate for receiving the thrust of said work material feeding means.

4,221,182

FLUIDIZED BED GAS COATING APPARATUS

Lloyd C. Brown, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation of Ser. No. 730,235, Oct. 6, 1976, abandoned. This application May 10, 1978, Ser. No. 904,548
Int. Cl.[2] **C23C** *11/00, 13/08;* **G21C** *3/06*
U.S. Cl. 118—716 **6 Claims**



1. Gas coating apparatus for coating particles with a substance contained in a reactant gas while the particles are suspended in a fluidized bed by means of a levitating gas, comprising

means defining a generally cylindrical chamber for containing the particles to be coated,

an inverted conical member having a downwardly extending apex forming a base for said coating chamber,

a single elongated nozzle extending upwardly from the apex of said conical member and having an outlet at its upper end substantially spaced apart from the chamber base and centrally located in the coating chamber for introducing the reactant gas into the coating chamber, and

means at the base of the nozzle forming a plurality of circumferentially spaced apart outlet orifices for introducing levitating gas into the chamber, said orifices being arranged in radially outwardly facing relation to direct said levitating gas radially outwardly and generally parallel with said conical base member in order to sweep the surface of the conical member with said levitating gas.

4,221,183

APPARATUS FOR TREATING STRAND

Gustav E. Benson, Newark, and Ralph S. Dale, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 8, 1979, Ser. No. 10,440
Int. Cl.[3] **B05C** *11/02, 3/02, 3/12*
U.S. Cl. 118—125 **11 Claims**

1. Apparatus for supplying a liquid to an advancing strand comprising:

a frame;

first actuator means associated with said frame;

a first element mounted on said frame, said first element having a port adapted to supply said liquid to said strand;

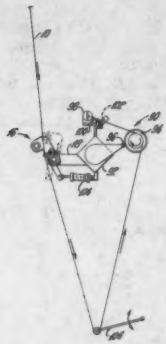
a member mounted on said first element;

a second element fastened to said member, said second element being spaced from said first element, said second element having a port adapted to supply said liquid to said strand;

a third element journaled at said member, said third element being spaced from said first element and said second element; and

second actuator means associated with said first actuator means, said second actuator means being fastened to said third element, said first actuator means and said second

actuator means being adapted to move said strand such that said strand does not contact said liquid supplied at said port of said first element when said member is in a



first position, said second element being positioned such that said strand does not contact said liquid supplied at said port of said second element when said member is in said first position.

4,221,184

CASTING BLOCK OF STABLE SHAPE

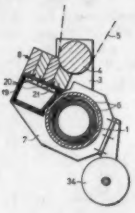
Hans Gref, Cologne; Karl Voss, and Willi Wasser, both of Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,768

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721184

Int. Cl.³ B05C *5/02*

U.S. Cl. 118—412 **7 Claims**



1. A casting device for coating a strip with a single layer or a plurality of layers, comprising a casting block supported by brackets during operation and otherwise on auxiliary brackets and comprising a plurality of shaped parts screwed together, a torsion-free hollow support, the casting block being rigidly fixed to the torsion-free hollow support and forming therewith a unit, a three-point bearing on the unit for maintaining it torsion-free on the brackets during operation and otherwise on the auxiliary brackets, and temperature control means in the casting device for maintaining its temperature substantially uniform when the device is being operated on the brackets and during final machining on the auxiliary brackets whereby the devices is maintained substantially free of torsion.

4,221,185

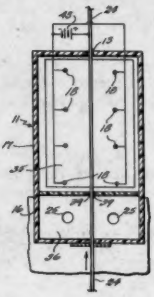
APPARATUS FOR APPLYING LUBRICATING MATERIALS TO METALLIC SUBSTRATES

Addison B. Scholes, Muncie, Ind., and David L. Dollar, Greeneville, Tenn., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 829,804, Sep. 1, 1977, abandoned, which is a continuation of Ser. No. 677,781, Apr. 16, 1976, abandoned, which is a division of Ser. No. 570,346, Apr. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 382,980, Jul. 26, 1973, abandoned. This application Jan. 22, 1979, Ser. No. 5,084

Int. Cl.² B05B *5/02*

U.S. Cl. 118—634 **20 Claims**



1. Apparatus for electrostatically coating metal sheets with a lubricant, comprising a housing having a first wall with an entry opening defined therein, a second laterally spaced wall having an exit opening defined therein, such entry and exit openings being of a size such as to readily accommodate movement of the sheet over a path between said openings through said housing, said housing including a chamber sufficiently remote from said path and providing a sufficient degree of confinement of the atmosphere within said chamber so as to maintain a substantially quiescent atmosphere within said chamber, charging electrode means, a lubricant supply opening into said chamber and spaced from the said charging electorde means a distance such that lubricating particles can be initially confined and dispersed within said chamber without being appreciably affected by electrical ionization from said charging electrode means, lubricant supply means for providing a fluid supply of said lubricant, particle forming means to provide a plurality of lubricating particles into said chamber through said lubricant supply opening, said particle forming means providing lubricant particles having a diameter to weight ratio such that they will remain suspended in the substantially quiescent atmosphere of the chamber, and means for moving quiescently said particles into said chamber and for introducing said particles uniformly within said chamber for charging and deposition on sheets moving over said path.

4,221,186

APPARATUS FOR FORMING TARGETS

Robert L. Woerner, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

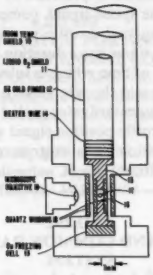
Division of Ser. No. 924,335, Jul. 13, 1978, Pat. No. 4,154,868. This application Jan. 24, 1979, Ser. No. 5,941

Int. Cl.² B05C *11/00*

U.S. Cl. 118—713 **5 Claims**

1. An apparatus for forming at least one substantially uniform layer of cryogenic material within a spherical member having at least one hollow shell therein containing the cryogenic material comprising: a nonisothermal freezing cell assembly having a chamber therein containing cryogenic heat exchange medium, means including a heating member posi-

tioned about a portion of said freezing cell assembly for heating at least said cryogenic heat exchange medium via heat conduction, a radiation shield positioned around said freezing cell assembly, and a vacuum shield positioned around said radiation shield, said chamber of said freezing cell assembly being adapted to retain an associated spherical member having cryogenic material contained therein, so that activation of said heating means heats said cryogenic heat exchange medium causing heating of cryogenic material in an associated spherical member retained therein via heat conduction, and deactivation of said heating means allows rapid recooling of said cryogenic heat exchange medium by said freezing cell assembly causing rapid recooling of an associated spherical member retained therein, whereby cryogenic material contained in an associated spherical member is heated to a temperature $T \gtrsim$ the liquification point thereof an rapidly recooled to a temperature $T \lesssim$ the solidification point thereof, thereby being formed into a substantially uniform layer.

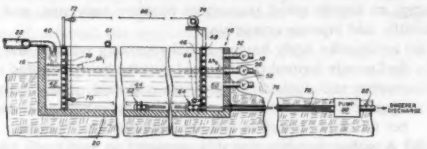


4,221,187

APPARATUS FOR RAISING FISH

Robert F. Casey, 22 Duggan Rd., Acton, Mass. 01720

Filed Feb. 1, 1978, Ser. No. 874,098
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—3 16 Claims



6. An apparatus for raising fish, comprising, in combination:

a. a tank for containing a supply of growing fish;

b. means for flowing water under substantially laminar conditions through said tank in a generally horizontal direction; and,

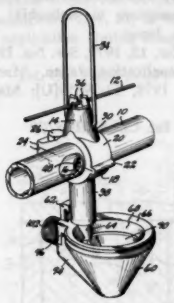
c. sweeping apparatus having a sweeper head slideably engaged at the bottom of said tank so that it can move longitudinally along the bottom of said tank, in either direction, to thereby remove particulate matter from the bottom of said tank without significantly interfering with the laminar flow of water in the bulk of said tank.

4,221,188

WATERING CUP FOR POULTRY AND ANIMALS

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Division of Ser. No. 836,386, Sep. 26, 1977, Pat. No. 4,185,590.
This application Apr. 30, 1979, Ser. No. 34,243
Int. Cl.³ A01K *39/02, 39/022*
U.S. Cl. 119—72 6 Claims



1. A water supply conduit having a plurality of longitudinally spaced outlets at its lowermost surface,

a clamp encircling said conduit at each outlet and including a downwardly projecting water tube communicating with a conduit outlet and an upwardly projecting electrically non-conductive part,

a normally closed first valve in said clamp tube,

a valved water dispensing unit,

quick detachable means connecting said dispensing unit to said clamp tube, and

means for holding said first valve in open position when said dispensing unit is connected to said clamp tube,

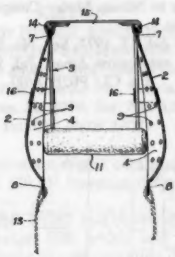
said upwardly projecting non-conductive clamp part including means for releasably positioning an electrically charged cable spaced above said conduit.

4,221,189

PROTECTIVE CUPS FOR NEWLY CROPPED EARS OF DOGS

Theadora A. Olvera, 364 Henson St., San Diego, Calif. 92114

Filed Apr. 30, 1979, Ser. No. 34,750
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—96 6 Claims



1. A device for protecting newly cropped ears of a dog which comprises:

a first rigid arcuate frame bridging over one of the newly cropped ears;

means for stationarily holding said frame on the head of the dog;

a first hemi-ovoidal shield made of rigid material, said shield

being shaped and dimensioned to cover the cropping scar when it is attached to said frame;

means for fixedly attaching said shield to said frame; and

means for anchoring said frame and shield on the dog's head.

4,221,190

COMBUSTION CHAMBER FOR AN INTERNAL COMBUSTION ENGINE OF DIRECT INJECTION TYPE

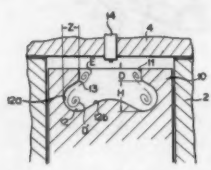
Kunihiko Komiyama; Seikichi Kanai, and Masaru Okada, all of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,714

Claims priority, application Japan, Mar. 10, 1978, 53-29658[U]; Mar. 10, 1978, 53-29659[U]; Mar. 10, 1978, 53-29660[U]

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—263 **4 Claims**



1. In an internal combustion engine of the direct injection type including combustion chambers each defined by a cylinder head, a cylinder liner, and a piston head having a wall defining a cavity therein, means for producing air swirl in said cavity and fuel injection means each having a plurality of fuel injection nozzles, said nozzles being arranged to inject jets of fuel into said cavity radially against said cavity wall, the improvement wherein said cavity wall is constructed to define a generally equilateral polygonal cavity formed in the upper part thereof and a generally toroidal cavity formed in the lower part thereof, the ratio of the depth of said equilateral polygonal cavity to that of said toroidal cavity being about 0.3 to about 1.2, and wherein said equilateral polygonal cavity has rounded corners formed therein, the ratio of the radius of said rounded corners to that of an inscribed circle of said equilateral polygonal cavity being from about 0.05 to about 0.8.

4,221,191

ELECTRONIC FUEL INJECTION WITH MEANS FOR PREVENTING FUEL CUT-OFF DURING TRANSMISSION GEAR CHANGES

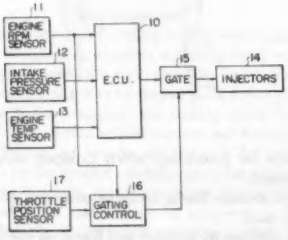
Masaharu Asano, Yokosuka, and Shigeo Aono, Seki, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jul. 12, 1977, Ser. No. 815,056

Claims priority, application Japan, Jul. 13, 1976, 51-82566

Int. Cl.² F02B *3/00*

U.S. Cl. 123—492 **5 Claims**



1. An electronic fuel injection system for an internal combustion engine mounted in a vehicle having a clutch for coupling the engine power to a drive shaft of the vehicle, a throttle valve in an air intake passage of the engine, a control unit responsive to an engine operating parameter for determining the duration of fuel injection for each working cycle of the cylinders of the engine, a throttle position sensor for generating throttle position signal when said throttle valve is nearly closed, means for generating an engine speed signal when the revolution of said engine per unit time is above a predetermined value, and means for inhibiting the injection of fuel in response to the simultaneous presence of said throttle position signal and said engine speed signal, comprising:

means for disabling said throttle position signal when said throttle position signal has a duration smaller than a predetermined period of time which is substantially equal to the period in which said throttle valve is nearly closed when said clutch is momentarily decoupled for acceleration and enabling said throttle position signal when the duration of said throttle position signal is greater than said predetermined period of time.

4,221,192

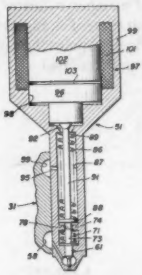
FUEL INJECTOR AND COMMON RAIL FUEL SUPPLY SYSTEM

Patrick R. Badgley, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 755,648, Dec. 30, 1976, abandoned. This application Jun. 26, 1978, Ser. No. 919,408

Int. Cl.² F02M *63/04*

U.S. Cl. 123—456 **15 Claims**



1. An injector for use in a fuel supply system of an internal combustion engine wherein fuel is supplied to a common rail leading to a plurality of fuel injectors, said fuel being under a pressure which is regulated within a pressure range by a fuel pump, an engine speed responsive pressure regulator, and a throttle, said injector comprising:

(a) an injector body having a fuel receiving passage and a fuel nozzle formed therein, said passage being adapted to receive said fuel under pressure and said nozzle being adapted to connect said passage with a combustion chamber for direct injection into said combustion chamber;

(b) A valve member movably mounted in said body and normally located in a closed position to block the flow of fuel from said passage to said nozzle;

(c) said valve member being a pintle type having an area thereof responsive to the pressure of the fuel in said passage and the force of the fuel on said area urging said valve member to an open position where a fuel flow area is formed from said passage to said nozzle;

(d) force applying means operative to apply a force on said valve member urging said valve member to said closed position and thereby to close said fuel flow area, said force applying means being related to said area of said member and to said pressure range so that the position of said valve

member and the size of said fuel flow area are functions of the fuel pressure;

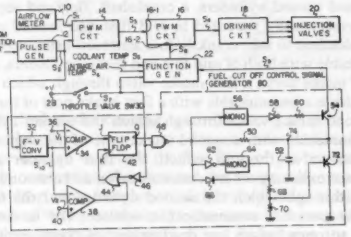
(e) and control means connected to said valve member for normally holding said valve member in the position where said flow area is closed and for periodically enabling said valve member to move to said open position and thereby to open said flow area for a period of time, whereby said common rail pressure controls said flow area and fuel is injected for said entire period of time and in an amount that is a function of said rail pressure.

4,221,193

FUEL INJECTION SYSTEM FOR AN AUTOMOTIVE INTERNAL COMBUSTION ENGINE EQUIPPED WITH A FUEL CUT OFF CONTROL SIGNAL GENERATOR

Mitsuhiko Ezoe, Yokosuka, and Akio Hosaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 10, 1978, Ser. No. 949,986
Claims priority, application Japan, Oct. 11, 1977, 52/120923
Int. Cl.[2] F02B *3/04*
U.S. Cl. 123—483 **6 Claims**



1. A fuel injection system equipped with a fuel cut off control signal generator, for an automotive internal combustion engine including; means for measuring an airflow rate of the intake air; means for producing a first pulse signal in response to the ignition pulses of said engine; means for modifying the pulse width of said first pulse signal in accordance with the measured airflow rate and for producing a second pulse signal; means for modifying the pulse width of said second pulse signal in accordance with the engine parameters and for producing a third pulse signal; means for driving fuel injection valves of said engine in accordance with said third pulse signal; and means for producing a fuel cut off control signal in accordance with the rotational speed of said engine and the opening degree of the throttle valve of said engine, the fuel cut off control signal being utilized for modifying the pulse width of said second pulse signal in accordance with the voltage thereof; wherein the improvement comprises:

(a) means for gradually varying the voltage of said fuel cut off control signal with respect to time when the voltage of said fuel cut off control signal changes abruptly, said means for gradually varying comprises a smoothing circuit having a time constant;

(b) first timer means for producing a first signal for a first predetermined period of time from the time the voltage of the input signal of said smoothing circuit decreases;

(c) second timer means for producing a second signal for a second predetermined period of time from the time the voltage of the input signal of said smoothing circuit increases;

(d) means for producing a third signal after said second predetermined period of time until the voltage of the input signal of said smoothing circuit starts decreasing; and

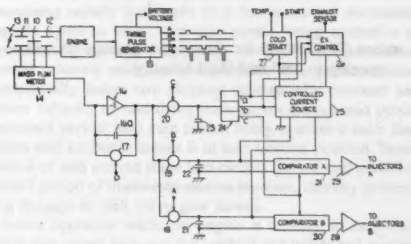
(e) switching means responsive to said first, second and third signals for transmitting and blocking the output signal of said smoothing circuit.

4,221,194

ELECTRONIC FUEL INJECTION CONTROL EMPLOYING GATE TO TRANSFER DEMAND SIGNAL FROM SIGNAL GENERATOR TO SIGNAL STORE AND USING DISCHARGE OF SIGNAL STORE TO CONTROL INJECTION TIME

Maurice J. Wright, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 835,083, Sep. 20, 1977, abandoned, which is a continuation of Ser. No. 717,058, Aug. 23, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,501
Claims priority, application United Kingdom, Sep. 5, 1975, 36585/75
Int. Cl.[3] F02B *3/00*
U.S. Cl. 123—478 **20 Claims**



1. An internal combustion engine electronic fuel injection control comprising

means for repeatedly generating a voltage signal related to the fuel requirements of the engine,

signal storage means,

gate means connected between the voltage signal generating means and said signal storage means,

means sensitive to at least one engine operating parameter for discharging said signal storage means at a rate determined by said engine operating parameter,

means connected to the gate means for opening the gate means during a predetermined part of each operating cycle of the engine, whereby said voltage signal is transferred to said signal storage means during said predetermined part, and for maintaining the gate means closed during other parts of each operating cycle of the engine, and

means sensitive to the length of time which said signal storage means takes to discharge for controlling the quantity of fuel injected.

4,221,195

LIQUID COOLED DIESEL ENGINE HAVING GAS COOLED PRECHAMBER

Joseph C. Hafele, and John C. McCornack, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 31, 1979, Ser. No. 8,007
Int. Cl.[3] F02B *3/00*
U.S. Cl. 123—254 **11 Claims**

1. An internal combustion engine comprising:

a first and second (10,24) housings defining an operating chamber (34);

a piston (14) movable within said operating chamber;

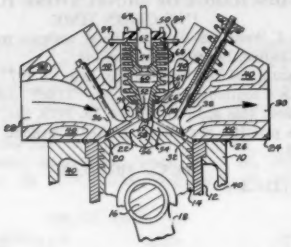
liquid coolant passages (40) within said first and second housing in proximity to said operating chamber;

means (46) for circulating a liquid coolant through said passages;

an opening (50,52) in said first housing extending to said operating chamber to be in fluid communication therewith;

a third housing (54) defining a prechamber (60) having a gas exit port (58) and a fuel receiving port (62), said third housing being disposed within said opening such that said

gas exit port is in fluid communication with said operating chamber, said third housing being externally finned (67,68) at least in the vicinity of said first housing; and



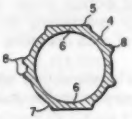
means (72,82,86,92) for directing a gaseous coolant to said opening to cool said third housing.

4,221,196

LINER FOR INTERNAL COMBUSTION ENGINE

Armand Castarede, Meudon la Foret, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 28, 1978, Ser. No. 973,935
Claims priority, application France, Jan. 3, 1978, 78 00033
Int. Cl.³ F02F 1/16
U.S. Cl. 123—41.84 **5 Claims**



1. A liner of the compressed type for an internal combustion engine having at least one cylinder, said liner comprising:

a cylindrical barrel having a predetermined thickness including a compressed portion;

means for maintaining a reduced interaxial distance between said cylinders, said means for maintaining a reduced interaxial distance including two opposed longitudinal flat portions on the outer surface of said liner and lying in planes which are perpendicular to the plane of the ends of said cylinders, the cylinder wall thickness at a mid portion of said flat portions is less than said predetermined thickness and the cylinder wall thickness adjacent the ends of said flat portions are greater than said predetermined thickness; and

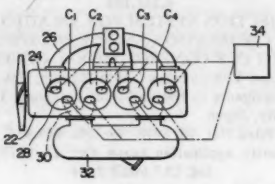
means for reinforcing the thickness of said compressed portion, said means for reinforcing including concave round-offs of longitudinal ends of said flat portions forming reinforcement zones and longitudinal reinforcement ribs circumferentially equidistantly spaced between said flats along the surface of said barrel.

4,221,197

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE HAVING SIAMESED EXHAUST PORTS

Hiroshi Kuroda, Tokyo; Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, Yokohama, and Haruo Fujino, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 26, 1977, Ser. No. 828,188
Claims priority, application Japan, Aug. 27, 1976, 51-101619
Int. Cl.² F01L 1/34
U.S. Cl. 123—316 **22 Claims**



1. In a multi-cylinder internal combustion engine including first and second cylinders, a crankshaft, first and second pistons reciprocally mounted in said first and second cylinders and attached to said crankshaft, a siamesed exhaust port communicable with both of said first and second cylinders, a plurality of intake ports, a first intake valve through which the first cylinder is communicable with a first intake port of the engine, a second intake valve through which the second cylinder is communicable with a second intake port of the engine, a first exhaust valve through which the first cylinder and the siamesed exhaust port are communicable, and a second exhaust valve through which the second cylinder and the siamesed exhaust port are communicable, wherein the intake valves begin to open before top dead center of crank rotation and close after bottom dead center of crank rotation, and wherein the exhaust valves begin to open before bottom dead center and close after top dead center of crank rotation,

the improvement comprising: means for establishing valve timing of the first intake and exhaust valves and the second intake and exhaust valves, said timing established with respect to the top dead center and bottom dead center positions of the pistons in the respective cylinders, said means setting the timing of said first cylinder differently with respect to the timing of said second cylinder to reduce exhaust valve opening overlap of said first and second cylinders.

4,221,198

INTERNAL COMBUSTION ENGINE WITH SUSTAINED POWER STROKE

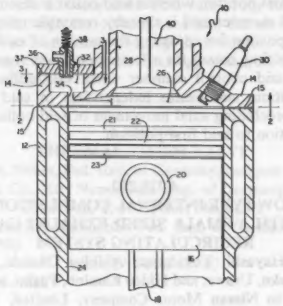
Robert J. McNair, Jr., Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 927,214, Jul. 24, 1978, Pat. No. 4,167,930. This application Oct. 5, 1978, Ser. No. 948,729
The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.
Int. Cl.³ F02B 19/16
U.S. Cl. 123—285 **8 Claims**

1. In combination with a four stroke cycle internal combustion engine wherein there is included a cylinder block having at least one cylinder, a piston in the cylinder with a reciprocating stroke volume of predetermined size, a cylinder head formed to provide a main combustion chamber closed at one end and opening into the stroke volume of the cylinder at the other end, means for supplying a fuel-rich mixture to the main combustion chamber during the intake stroke of the piston, said intake stroke followed by a compression stroke wherein the piston moves to minimize the volume in the main combustion chamber compressing the fuel-rich mixture, means for

igniting the fuel-rich mixture near the top dead center position of the piston to bring about a power stroke preceded by a flame front propagation across the main chamber from an ignition point, means for purging the main combustion chamber through an exhaust port during the exhaust stroke of the piston, the improvement which comprises:

a Helmholtz resonator cavity of invariable volume in communication with the main combustion chamber of said cylinder via a constricted slot, said slot defined by an opening into said combustion chamber and a lip from the opening into said cavity, said slot being small enough in width so that the flame in the main combustion chamber is



quenched in the opening, said slot being at least a half wavelength long and providing a cross-sectional area large enough to permit the free flow of gas between the main combustion chamber and the cavity without a pressure drop at the conclusion of the compression stroke, the depth of the lip being sized in fractions of the wavelength of the propagation velocity of said flame front, the depth of said resonator cavity being sized in multiples or fractions of a wavelength to provide substantially other than 180 degrees of phase difference between the entering wave and the reflected wave; and

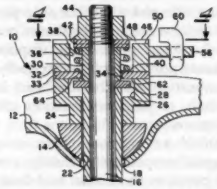
means for supplying air to said resonator cavity during the intake stroke of the piston.

4,221,199

PLURAL LASH ENGINE VALVE GEAR AND DEVICE FOR SELECTING SAME

Bryce A. Buuck; William T. Mihalic, and David P. Clark, all of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 13, 1977, Ser. No. 805,687
Int. Cl.[2] F02D *13/06*
U.S. Cl. 123—90.16 **4 Claims**



1. In an internal combustion engine of the type having valve means for controlling flow to and from a combustion chamber, drive means for providing cyclical motion for opening and closing said valve means in timed relationship to the events in said combustion chamber, and valve gear means operative in response to said cyclic motion to effect cyclic opening and closing of said valve means, the improvement comprising:

(a) said valve gear means including,

(i) two-state latchable means movable between a latched and unlatched position and operative in said latched position to provide a first stage predetermined lash and effect normal predetermined cyclic opening and closing of said valve means, said two-state means in unlatched position being operable to effect lost motion of said drive means and provide a predetermined second stage lash substantially greater than said first stage lash for effecting cyclic opening and closing of said valve means by a predetermined amount less than said normal predetermined opening and closing and,

(ii) contact means for contacting said drive means and following said cyclical motion;

(b) said drive means including cam means operative during said cyclic motion to impart to said valve train means movement increasing rapidly from zero to a maximum and decreasing rapidly again to zero, said cam means being operative to provide, during said increasing motion, a predetermined period wherein said motion increases at a predetermined substantially linear rate yielding substantially constant and lower velocity of said drive train means during said predetermined period, said cam means being operative such that, when said latchable means is in said latched position, termination of said second stage lash occurs during said predetermined period of linear rate motion increase, thereby preventing damage to said valve gear means;

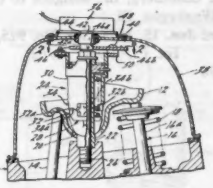
(c) means operative while the engine is running to move said latchable means between the latched and unlatched position for changing from said valve gear from first stage to said second stage lash for operating the engine in a selected mode of increased or decreased opening of said valve means.

4,221,200

CONTROL FOR VALVE DISABLERS

Raymond A. Soeters, Jr., Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 5, 1975, Ser. No. 610,718
Int. Cl.[3] F02D *13/06*; F01L *1/18*
U.S. Cl. 123—90.16 **24 Claims**



1. In an internal combustion engine having means controlling valve disablement of a selected intake and exhaust valve pair, said selected intake and exhaust valves each provided with a valve disabler having means moveable between a valve enabling position and a valve disabling position, the improved means comprising:

means interconnecting said moveable means of the selected valve pair;

actuator means operative when energized to apply an actuating force tending to move both moveable means simultaneously to the disabling position and effecting such movement when the associated valves are inactive;

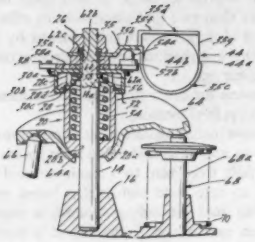
return means operative to apply a biasing force counter to said actuating force for moving both moveable means to said enabling positions; and

lost motion means associated with said interconnecting means and operative to allow movement of one of said moveable means to said enabling position before movement of the other moveable means to said enabling position.

4,221,201
CONTROL MEANS FOR VALVE DISABLER

Raymond A. Soeters, Jr., Royal Oak, Mich., assignor to Eaton Corporation, cleveland, Ohio

Filed Mar. 30, 1976, Ser. No. 671,764
Int. Cl.[3] F02D 13/06; F01L 1/18
U.S. Cl. 123—90.16 16 Claims



1. An improved control means for a valve disabler of the type including a fulcrum means adapted to be slideably supported on a rocker arm stud of an internal combustion engine having a rocker arm which pivots about said fulcrum means to open and close a valve when said fulcrum means is retained against sliding movement, said improved control means comprising:

latch means moveable between a valve enabling position preventing sliding movement of said fulcrum means and a valve disabling position allowing sliding movement of said fulcrum means;

first means defining a stop means;

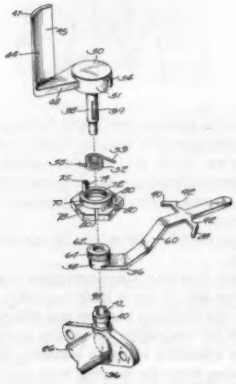
second means for orienting said latch means with respect to said stop means; and

adjustable means for orienting said disabler with respect to said stop means.

4,221,202
AIR VANE CARBURETOR WITH ADJUSTABLE SPEED

Gerald H. Wick, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 15, 1978, Ser. No. 915,662
Int. Cl.[2] F02D 11/02
U.S. Cl. 123—378 7 Claims

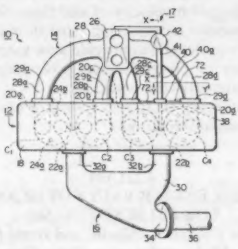


1. An internal combustion engine comprising a carburetor, a movable throttle for controlling fluid flow through said carburetor, said throttle being movable from an open position to a flow restricting position, a movable air vane connected to said throttle for moving said throttle, means responsive to engine rotation for forcing air against said air vane so as to urge said throttle to said flow restricting position, a spring for urging said throttle to said open position, said spring including opposite ends, one of said opposite ends being connected to said throttle, and means for varying the force of said spring on said throttle and including a control member movable between a first spring force level position and a second spring force level position, said control member including a cylindrical portion and a second portion extending from said cylindrical portion, said force varying means further including an annular collar which surrounds said cylindrical portion, which is connected to the other of said opposite ends of said spring, and which is movable in the direction of the axis of said cylindrical portion between a first position wherein said collar is disengaged from said control member and is thereby rotatable relative to said cylindrical portion for adjusting the tension of said spring and a second position, means for effecting common rotation of said collar and said control member when said collar is in said second position, and means independent of said spring for releasably precluding axial movement of said collar from said second position to said first position.

4,221,203
CROSS-FLOW TYPE INTERNAL COMBUSTION ENGINE WITH A SMALL SIZED EXHAUST GAS RECIRCULATING SYSTEM

Yoshimasa Hayashi, Yokohama; Akihiro Ohnishi, Kitamoto; Makio Waku, Urawa, and Hideo Kamino, Fuchu, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 691,025, May 28, 1976, abandoned.
This application Jun. 16, 1978, Ser. No. 916,057
Claims priority, application Japan, Jun. 24, 1975, 50-88313
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—568 4 Claims



1. A system comprising:

an inline reciprocating internal combustion engine having a cylinder block and a cross flow type cylinder head disposed on top the cylinder block to define therebetween four aligned combustion chambers, said cylinder head having on one side and the other side portions with four intake ports and two siamesed exhaust ports, each of said two siamesed exhaust ports being disposed to unite two adjacent exhaust ports which respectively lead from two adjacent combustion chambers of said four combustion chambers, each of said combustion chambers having therein two spaced spark plugs;

an intake manifold having four tubes united at upstream portions thereof respectively fluidly connected at the downstream portions thereof to said four intake ports of said cylinder head;

an air-fuel mixture supply means positioned upstream of said intake manifold for supplying an air-fuel mixture into said intake manifold;

a thermal reactor having two inlet tubes and an outlet tube, said two inlet tubes being respectively connected to said two siamesed exhaust ports so that exhaust gases from said combustion chambers are forced to pass through said

thermal reactor for after-combustion thereof before being discharged into the atmosphere through said outlet tube; and

exhaust gas recirculating means for recirculating a portion of the exhaust gases from the combustion chambers back into said combustion chambers through said intake manifold, said exhaust gas recirculating means comprising a through hole formed in said cylinder head to extend from one of said siamesed exhaust ports to the one side portion of said cylinder head, a conduit tube having one end open into an air-fuel mixture passage defined in said air-fuel mixture supply means and the other end fluidly connected to said through hole, and a gas flow controller disposed in said conduit tube to control the flow rate of the exhaust gases passing through the conduit tube into the air-fuel mixture passage in response to the degree of venturi vacuum created in said air-fuel mixture passage of said air-fuel mixture supply means.

4,221,204

THERMAL TIMER VALVE

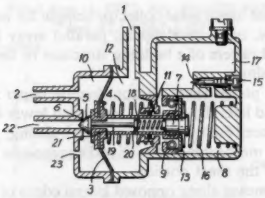
Otto Meyer, Neuss, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,399

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 7809593

Int. Cl.³ F02B *33/00*

U.S. Cl. 123—568 **1 Claim**



1. A thermal timer valve for temperature-dependent operation of accessory devices of a mixture preparation system of a combustion engine, comprising: a membrane chamber; a membrane located in said membrane chamber; a rod connected to said membrane; a valve closure element connected to one end of said rod; an oil chamber; a piston connected to the other end of said rod and located in said oil chamber; said oil chamber having an adjustable overflow channel means, said piston having disk check valve means; said overflow channel means having a compensation chamber, said membrane chamber being subjected to intake pipe negative pressure; said valve being an opening valve and after opening supplies continuously an accessory device with intake pipe pressure for keeping said pipe operable, said membrane shifting against the force of compression springs when said membrane chamber is acted upon by intake pipe negative pressure; said piston forcing oil through said overflow channel when said disk valve means is closed so that oil reaches the other side of said piston, said piston having a shape of a pipe holding a compression spring and a pin carrying a closure element in the area of said membrane, said closure element remaining in a valve seat until said pin is actuate by joint action of two stops when said membrane shifts under influence of pressure, said valve seat being opened and intake pipe negative pressure reaching said accessory device to be actuated; a reference pressure chamber forming pressure between applied negative pressure and atmospheric pressure and having a nozzle for being continuously vented, said reference chamber having a pressure higher than the pressure in said membrane chamber, said membrane when being in retracted position until negative pressure is eliminated and the pressure in the membrane chamber rises so that forces of said compression springs can force said closure element back to the valve seat.

4,221,205

CIRCUIT ARRANGEMENT FOR THE CONTROL OF A STARTING OPERATION OF A DIESEL ENGINE

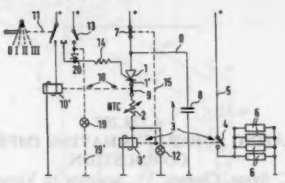
Rudolf Koehler, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,482

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659264

Int. Cl.² F02N *17/02*

U.S. Cl. 123—179 H **9 Claims**



1. A circuit arrangement for the control of the starting operation of a diesel engine in a motor vehicle, comprising time-control switch means determining the duration of engagement of a preheating circuit means, said time-control switch means being operable to be triggered by a drive-start-switch means, characterized in that the timing switch means is triggered by an auxiliary switch means independently of the drive-start-switch means.

4,221,206

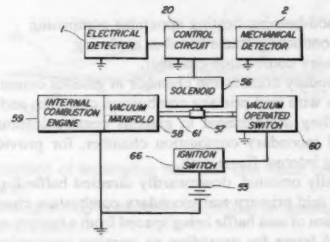
CARBON MONOXIDE DETECTOR AND DEACTIVATING MECHANISM

Robert G. Haas, 1019 Grandview, Lockport, Ill. 60441

Filed Nov. 13, 1978, Ser. No. 960,331

Int. Cl.² F02D *11/04, 11/10*; G01N *27/16*

U.S. Cl. 123—198 DC **4 Claims**



1. A carbon monoxide detector assembly, including means defining a compartment, a first detecting means defining an electrical detector to detect a pre-determined amount of carbon monoxide in said compartment and respond thereto, a second detecting means defining an electro-mechanical detector to detect the same pre-determined amount of carbon monoxide in said same compartment and respond thereto, means defining an internal combustion engine source of carbon monoxide, signal means to signal the presence of a dangerous level of carbon monoxide concentration when detected by said first and second detecting means, a deactivating mechanism to discontinue operation of said internal combustion engine source of carbon monoxide upon receipt of a signal from said signal means that a dangerous level of carbon monoxide concentration is present, said deactivating mechanism being responsive to said signal means to cause operation of said internal combustion engine source of carbon monoxide to be discontinued, said deactivating mechanism including automatic reset

positive interruption means to automatically restore conditions for operation of said internal combustion engine after interruption thereof by said signal from said signal means, positive indication means to indicate that said internal combustion engine has stopped operation, wherein said deactivating mechanism will not restore conditions for operation of said internal combustion engine until receipt of a positive indication from said positive indication means that said internal combustion engine has stopped operation.

4,221,207

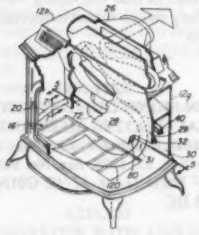
HEATING APPARATUS HAVING IMPROVED COMBUSTION

Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Continuation of Ser. No. 837,608, Sep. 28, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,326

Int. Cl.³ F24C *1/14, 15/28*

U.S. Cl. 126—77 **21 Claims**



1. A wood-burning heating apparatus comprising

a heat conducting frame member enclosing

a primary combustion chamber,

a secondary combustion chamber in gaseous communication with said primary combustion chamber, and

a baffling arrangement in gaseous communication with said secondary combustion chamber, for providing a long internal flame path,

a vertically oriented, downwardly directed baffle for separating said primary and secondary combustion chambers, a portion of said baffle being spaced from a bottom surface of said frame for providing an opening connecting said primary and secondary combustion chambers adjacent said frame bottom surface for providing said gaseous communication therebetween,

a primary air supply path for providing air for promoting combustion in said primary combustion chamber,

a secondary air supply path spaced apart from said primary air path and extending at least along said downwardly directed baffle for providing preheated air to said secondary combustion chamber at said opening,

a manually controlled night air supply path spaced apart from said primary and secondary supply paths for providing a controlled amount of preheated air from a manually controlled inlet port to said secondary combustion chamber, and

a combustion products exit aperture at a top portion of said frame and in gaseous communication with said baffling arrangement for providing an exit port for combustion products.

4,221,208

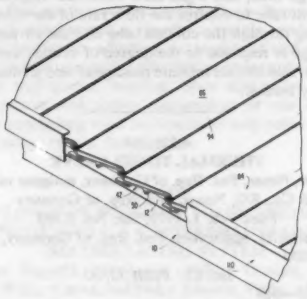
SOLAR COLLECTOR ASSEMBLY

John A. Murphy, Jr., 7273 N. Central Ave., Phoenix, Ariz. 85020

Continuation-in-part of Ser. No. 911,572, Jun. 1, 1978, abandoned, and a continuation-in-part of Ser. No. 827,417, Aug. 24, 1977, Pat. No. 4,111,188, and a continuation-in-part of Ser. No. 712,291, Aug. 6, 1976, abandoned. This application Nov. 28, 1978, Ser. No. 964,405

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—432 **7 Claims**



1. An extruded metal solar collector shingle for mounting in multiple shingle, edge overlapping, parallel array fashion on laterally spaced rafters of a building structure or the like, said shingle comprising:

an elongated planar sheet portion, having upper and lower surfaces and laterally opposed upper and lower edges, said upper surfaces facing away from the building;

fluid conduit means integral with and engaged on one of the surfaces of the sheet portion;

interlocking means along opposed lateral edges of said sheet portion comprising upward projections on the upper edges of the sheet portion, channels defined by depending projections on the lower edges of the sheet portion and an L-shaped flange having an inwardly extending foot depending from the upper edge of the sheet portion, said depending projections engaging over the upward projections for forming a mechanical interlocking connection between overlapping edges of respective sheet portions of adjacent shingles; and

light transmissive plates having leading and trailing edges and means engaging said edges in interlocking relationship with said interlocking means such that said plates are securely locked to and spaced from said sheet portion.

4,221,209

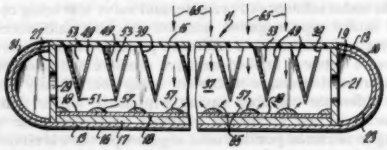
SOLAR HEAT EXCHANGE PANEL

Nathan J. Thorne, P.O. Box 354, Saugerties, N.Y. 12477

Continuation-in-part of Ser. No. 775,000, Mar. 7, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,072

Int. Cl.² F24J *3/02*

U.S. Cl. 126—441 **9 Claims**



1. A solar heat exchanger panel comprising:

a plurality of bars, each bar being V-shaped with an apex and a trough and being adapted to absorb heat on all surfaces, said bars being located in a common plane and in a spaced relationship to one another forming spaces between the bars;

an enclosure means having a transparent top and a reflective bottom surface within said enclosure means, said reflective bottom surface generally facing said transparent top, said bars being supported by said enclosure means in a spaced relationship with both said transparent top and said reflective bottom surface, with the apex of each of the plurality of bars pointed toward the reflective surface and the trough of said plurality of bars open toward the transparent top, the space between each of the plurality of bars being less than the space across the top of each trough, said reflective bottom surface including a plurality of convex strips located directly below the spaces between the plurality of bars;

inlet means partially coextensive with said enclosure means for supplying cold air into said enclosure means and across said plurality of bars; and

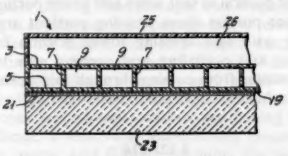
outlet means partially coextensive with said enclosure means for discharging heated air from said enclosure.

4,221,210

SYSTEM AND METHOD FOR COLLECTING ENERGY FROM THE SUN

George B. Cvijanovich, Glen Rock, N.J., assignor to Heliotherme, Inc., Bloomfield, N.J.

Filed Aug. 1, 1977, Ser. No. 820,903
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—445 15 Claims



1. A system for collecting energy from the sun comprising

a transparent panel which absorbs substantially no energy from the sun composed of a plurality of channels open at both ends,

a liquid flowing through said channels said liquid comprising a dispersion of dark pigment particles having a particle size of about 1 mμ to about 0.1 mm., in deionized water, wherein as a result of the particle size and amount of said pigment in said dispersion, the light absorbing characteristics of said liquid are such that said liquid, flowing through said channels absorbs about 85 to 100% of energy from impinging rays of the sun per centimeter thickness of the liquid,

means for continuously introducing said liquid into one end of said channels and

means for continuously removing said liquid from the other end of said channels.

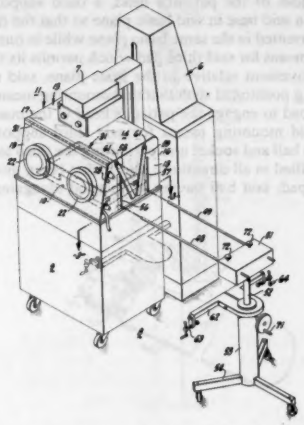
4,221,211

INFANT ELEVATOR FOR USE WITH AN INCUBATOR

Robert C. Brasch, Mill Valley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 14, 1979, Ser. No. 12,140
Int. Cl.[3] A61G 11/00
U.S. Cl. 128—1 B 6 Claims

1. An infant elevator in combination with an incubator comprising means providing a supporting table, a hood supported on said table and with said table providing an infant enclosure, an infant tray adapted to rest on said table within said hood, lift arm engaging means on said tray in predetermined positions, means in said hood defining openings in alignment with said predetermined positions, an elevator including a plunger means adapted to move vertically alongside of and relative to



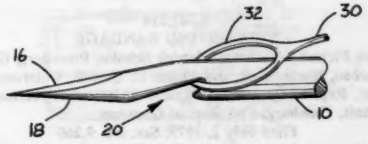
said table, and lifting arms on said plunger means movable through said openings into and out of physical supporting engagement with said engaging means.

4,221,212

METHOD OF IMPLANTING HAIR

Paul W. Miller, Atlanta, Ga., assignor to Hairegenics, Inc., Atlanta, Ga.

Division of Ser. No. 819,675, Jul. 28, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,614
Int. Cl.[2] A61B 17/00
U.S. Cl. 128—1 R 3 Claims



1. A method of implanting hair into skin tissue comprising the steps of

(a) forming a loop completely encircling an opening on the end of a hair;

(b) passing the opening encircling loop over the tip of a needle and into hooked engagement within a notch formed in a side of the needle adjacent the needle tip;

(c) inserting the needle and hair loop hooked thereto into skin tissue; (d) releasing the hooked hair loop from the needle; and (e) extracting the needle from the skin tissue.

4,221,213

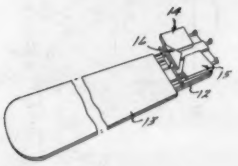
HEADPIECE (HEAT-SUPPORT) HAVING ADJUSTABLE PADS

Ralph R. Gregory, 217 W. Second St., and Peter Benesh, 1910 N. Telegraph, both of Monroe, Mich. 48161

Filed Jun. 14, 1978, Ser. No. 915,458
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—70 8 Claims

1. In a headpiece for use during a chiropractic treatment of a patient in which said headpiece is secured to a platform at the head end of a table on which a patient lies on the right or left side, a pair of like pads of opposite hand mounted in the same

basic plane, a base, hinge-means supporting the adjacent edges of the pads on said base for upward swinging movement out of the basic plane to form a V-shaped recess adapted to engage opposite sides of the patient's head, a third supporting pad mounted on said base in said basic plane so that the three head pads are mounted in the same basic plane while in one position; mounting means for said third pad which permits its tilting and vertical movement relative to the basic plane, said mounting means being positioned such that said mounting means permits said third pad to engage the patient's head in the mastoid area thereof, said mounting means for said third supporting pad including a ball and socket unit permitting the third supporting pad to be tilted in all directions; said socket being mounted on said third pad; said ball having an integral elongated bottom



portion and both the ball and the bottom portions being longitudinally split to form split ball and bottom portions; a fulcrum member mounted between said split ball portions adjacent the juncture of the ball and bottom portions about which said split ball and bottom portions pivot to secure the ball in the socket; a spring mounted between the split bottom portions to urge said bottom portions apart; said base having a vertical aperture in which the split bottom portions are disposed for vertical movement; and spring means located between the bottom of the vertical aperture and said slit portions for urging the ball and bottom portions outwardly of said base when the bottom portion is engaged and the split portions are moved toward each other; and locking means to effect movement of the bottom portions for securing said third pad in secured position.

4,221,214

SUPPORTING BANDAGE

Hanns Pietsch, Hamburg; Dietrich Schulte, Pinneberg; Gunther Sachau, Norderstedt, and Jurgen C. Quandt, Uetersen, all of Fed. Rep. of Germany, assignors to Biersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Feb. 2, 1979, Ser. No. 9,266

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806509

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—90 **18 Claims**

1. A bandage for forming a stiffening and/or supporting cast comprising a carrier material comprising a flexible fabric and a composition on said material, said composition comprising

(a) 55–97% by weight burnt gypsum,

(b) 1–30%, preferably 3–30%, by weight of a finely dispersed vinyl ester polymer powder, said powder being more than 50% insoluble in ethyl acetate, and

(c) 0–12%, preferably 3–12%, by weight of a light weight cellular or porous filler having a bulk density of up to 0.1 g/cc.

4,221,215

ANCHORING AND OCCLUDING SURGICAL DRESSING

Isidore Mandelbaum, 803 Springmill La., Indianapolis, Ind. 46260

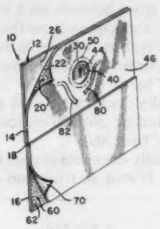
Filed Apr. 19, 1979, Ser. No. 31,371

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—155 **21 Claims**

1. A surgical dressing comprising:

a dressing upper portion having a rear surface adapted to contact a patient, a front surface adapted to face away from a patient, attaching means on said rear surface for attaching said dressing upper portion to a patient, an opening defined in said dressing upper portion, an elongate band attached at one end thereof to said dressing upper portion adjacent said opening, said band having another end thereof adapted to be attached to a medical device extending through said opening and at an angle with respect to said upper portion, said another end being adapted to be attached to such surgical device at a location spaced from said dressing upper portion front surface for anchoring such medical device to a patient via said dressing upper portion; and



a dressing lower portion foldably connected to said dressing upper portion, said dressing lower portion having a rear surface and a front surface, second attaching means on said dressing lower portion front surface which attaches to said dressing upper portion front surface when said dressing lower portion is positioned to overlie said dressing upper portion so that when said lower portion overlies said upper portion those dressing portions are attached together with said dressing lower portion completely convering and occluding said opening area to prevent foreign matter from passing through said opening when no surgical device is located in said opening.

4,221,216

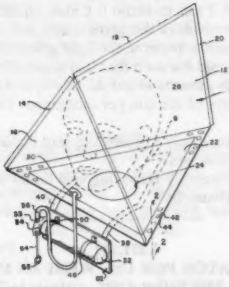
EMERGENCY ESCAPE BREATHING APPARATUS

Max L. Kranz, Brea, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 6, 1978, Ser. No. 883,362

Int. Cl.³ A62B *7/02, 17/04*

U.S. Cl. 128—201.23 **19 Claims**



1. A protective hood for a person's head to receive a breathable atmosphere containing elemental oxygen from a source thereof and to maintain said atmosphere for said person in a hostile environment which comprises:

a. a sealed tent in the shape of a tetrahedron having a front and two side vertical walls formed of a thin transparent plastic film;

b. a thin elastomer film sealed at its outer edges to the bottom edges of said vertical walls and having a central opening

of sufficient diameter in a stretched state to receive said person's head and to yieldably seal when released about the person's neck whereby said elastomer film functions as an exhalation valve means to maintain an internal pressure within said hood at sufficient value to maintain said hood inflated but insufficient to prevent normal breathing of said person; and

said hood having a single aperture in said front vertical wall for connection to said breathable atmosphere source whereby fresh gas supply is directed at the person's face.

4,221,217

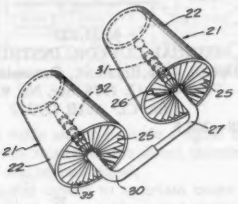
NASAL DEVICE

Saul O. Amezcua, Mazatlan #118, Condesa Colony, Mexico City, Mexico

Continuation-in-part of Ser. No. 757,193, Jan. 6, 1977, abandoned. This application May 1, 1978, Ser. No. 901,464

Int. Cl.³ A61M *15/08*; A62B *23/06*

U.S. Cl. 128—206.11 **7 Claims**



1. An article comprising at least one removable means for affecting gases passing therethrough, and loop-shaped means for holding in at least one nasal passage said at least one removable gas-affecting means, said loop-shaped means including means proximate at least one end of the loop for engaging and holding said gas-affecting means, said gas-affecting means including hollow sleeve means having an open first end diverging to an open second end, said first end having an inwardly directed flange, a removable gas-affecting element means in said sleeve means, said flange preventing the escape of said element means from said first end of said sleeve means, a multi-passage packing means mounted within said second end for preventing the escape of said element means from said second end, said packing means having a cylinder mounted therein in the axial direction of said sleeve means, said cylinder having an axially extending bore therethrough, said element means including passage means aligned with said bore of said cylinder, said means proximate at least one end of said loop for engaging and holding said gas-affecting means extending into said bore and said passage means and being removably secured therein whereby said element means and said packing means alone receive and engage the engaging means on said loop.

4,221,218

DISPOSABLE HYPODERMIC SYRINGE

Frederick W. Pfleger, 1152 Barbara Dr., Cherry Hill, N.J. 08003

Filed Jan. 18, 1979, Ser. No. 4,732

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—218 D **9 Claims**

1. A disposable hypodermic syringe comprising a straight glass tubing having a distal end and a proximal end, said distal end and said proximal end having an opening equal to the internal dimension of said tubing, a slideable plunger in said proximal end, a compressible seal for sealing said distal end, a casing for said tubing having a locating surface for locating said proximal end of said tubing, a closing member for closing said tubing in said casing, connecting means comprising separate cooperating mating elements one of which is located on said closing member and one of which is located on said casing such that in the connected position said connecting means cooperate to retain said closing member to said casing, a cannula having an inner end and an outer end mounted to said closing member in a non-activated position with said inner end

adjacent to said compressible seal and pierceable through said seal in an activated position and a plunger rod adaptable to said slideable plunger.

4,221,219

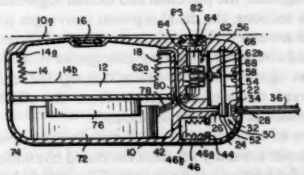
IMPLANTABLE INFUSION APPARATUS AND METHOD

Elton M. Tucker, Medfield, Mass., assignor to Metal Bellows Corporation, Sharon, Mass.

Filed Jul. 31, 1978, Ser. No. 929,427

Int. Cl.³ A61M *7/00*

U.S. Cl. 128—260 **9 Claims**



1. Implantable infusion apparatus comprising

A. a housing,

B. a variable volume main infusate reservoir positioned in the housing,

C. a variable volume auxiliary infusate reservoir positioned in the housing, said auxiliary reservoir having a smaller volume than said main reservoir,

D. a first fluid passage communicating between the main reservoir and the auxiliary reservoir,

E. a second fluid passage communicating from the auxiliary reservoir exteriorly of said housing,

F. valve means mounted inside the housing, said valve means being movable between a first position that opens said first passage while closing the second passage and a second position that closes the first passage while opening the second passage,

G. a confined fluid under pressure acting on the main reservoir tending to reduce its volume and thereby pressurize the infusate therein to a first pressure,

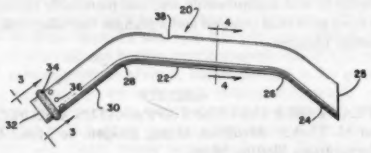
H. a confined fluid under pressure acting on the auxiliary reservoir tending to reduce its volume and thereby pressurize the infusate therein to a second pressure less than the first pressure so that

(1) when the valve means is in its said first position, infusate flows from the main reservoir to the auxiliary reservoir whereupon, due solely to the higher pressure of the infusate in the main reservoir, the auxiliary reservoir volume is enlarged thereby raising the pressure of the confined fluid acting on that reservoir, and

(2) when the valve is in its second position, infusate flows from the auxiliary reservoir through the second fluid passage whereupon, due solely to the raised pressure of the confined fluid acting on the auxiliary reservoir, the volume of the auxiliary reservoir is reduced thereby forcing infusate from the auxiliary reservoir through the second fluid passage, and

I. means for moving the valve means between its two positions.

4,221,220
SURGICAL SUCTION APPARATUS
James Hansen, P.O. Box 136, Anaholo, Kauai, Hi. 96703
Filed Jan. 19, 1978, Ser. No. 870,918
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 **2 Claims**



1. A suction collection system comprising a one-piece hollow tube having proximal, medial and distal segments wherein the proximal and distal segments are angularly related to the medial segment; the proximal and medial segments have circular cross sections; the distal segment converges into an elliptical cross section terminating in an elliptical shaped entrance,

a raised circumferential ring contiguous with the distal segment spaced slightly inward along the distal segment toward the medial segment from the elliptical shaped entrance of the distal segment,

a series of small circular apertures circumscribing the distal segment inwardly adjacent the raised circumferential ring,

a circular suction control aperture mounted along a circumference of the circular cross-section medial segment near an intersection of the medial and distal segments,

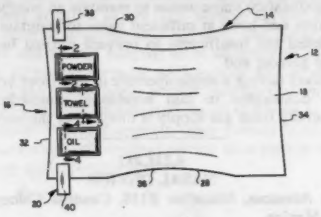
a large diameter suction tube connected to a proximal end of a section nozzle and connected to a large diameter suction pipe in a cap of a vomitus collection system and a smaller diameter tube connected between a smaller diameter suction pipe in the cap of the vomitus collection system and a vacuum service outlet.

4,221,221
UTILITY DIAPER STRUCTURE
Jimmie L. Ehrlich, Rte. 2, Wilson, Kans. 67490
Filed May 19, 1978, Ser. No. 907,831
Int. Cl.[3] A61F *13/16, 13/18, 13/20*
U.S. Cl. 128—284 **9 Claims**

1. A utility diaper structure adapted for use with human babies and the like, comprising:

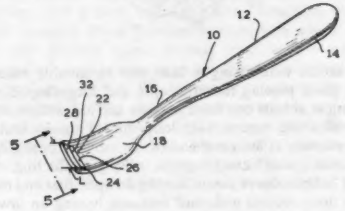
(a) a diaper assembly with a main body having a connector assembly adjacent outer end walls of said main body for securing about a waist area of a human baby;

(b) a container assembly connected to said diaper assembly; and



(c) said container assembly having a baby maintenance item sealed therein in a sanitary, sealed manner and releasably connected to said main body.

4,221,222
MEDICAL CUTTING INSTRUMENT
Steven G. Detsch, 4146 Bryan St., Oceanside, Calif. 92054
Filed Jun. 12, 1978, Ser. No. 914,844
Int. Cl.[3] A61B *17/322*
U.S. Cl. 128—305.5 **11 Claims**



1. A gingival microtome for removing gingival graft tissue from donor sites comprising an elongated handle having an outer end and an inner end portion, a pressure exerting portion connected to the inner end portion of said elongated handle, said pressure exerting portion comprising a concave dish-shaped portion adapted to accept the curvature and pressure of a human finger or the like when said gingival microtome is in use, said pressure exerting portion having a curved surface shaped to generally conform to the shape of the tissue in the vicinity of the tissue that is to be cut, and a cutting portion located adjacent to said pressure exerting portion, said cutting portion having a slot and a curved blade member having a sharp cutting portion located adjacent to the slot in said cutting portion, said cutting portion having an undercut under portion with at least a portion thereof that terminates at the sharp cutting portion of said blade member, said blade member having the sharp cutting portion thereof facing generally in a direction toward said elongated handle, the cutting portion of said blade member being substantially perpendicular to the long axis of said elongated handle, said concave dish-shaped portion being positioned immediately above the pressure exerting portion and extending forwardly into the slot.

4,221,223
CARDIAC MONITORING APPARATUS
Rolf W. Linden, Clearwater, Fla., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed May 24, 1978, Ser. No. 909,229
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—706 **16 Claims**

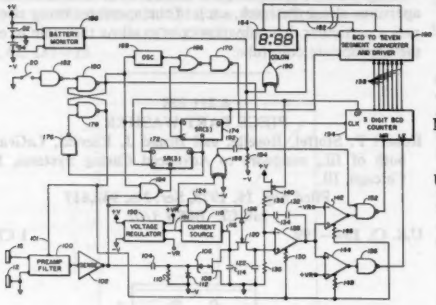
1. Circuit means for a cardiac rate monitoring circuit comprising:

means for detecting a signal manifesting a heartbeat in response to an electrocardiac signal applied thereto;

means responsive to the rate of said detected signals for providing a voltage related to said rate;

integrating means for integrating said voltage and providing first and second control signals as said integrated signal increases beyond respective first and second magnitude;

counter means for being reset by said first signal to count



from an initial value and to provide a signal manifesting said heart rate as related to the count therein upon the occurrence of said second signal;

wherein said counter counts to a certain count above the count therein at the time said second control signal is provided; and

wherein said circuit means further includes means responsive to said counter reaching said certain count for resetting said integrating means.

4,221,224

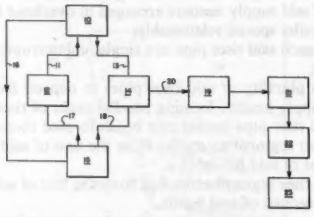
NON-AIRTIGHT PULMONARY MEASURING DEVICE

Justin S. Clark, Salt Lake City, Utah, assignor to Intermountain Health Care and Primary Children's Medical Center, both of Salt Lake City, Utah

Filed Jun. 29, 1978, Ser. No. 920,167

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—718 **17 Claims**



1. A method of sampling and analyzing alveolar air in a human subject without requiring an air-tight seal between the subject and the monitoring equipment to determine alveolar ventilation, carbon dioxide production and oxygen uptake comprising the steps of;

(a) determining the onset of inspiration,

(b) directly introducing a known amount of an inert tracer gas into the airway of the patient by non-airtight catheter means during inspiration such that the inert tracer gas is distributed in the inspired air and is carried to the alveoli, leaving essentially no tracer gas in the anatomical dead space,

(c) determining the onset of expiration of alveolar air and directly sampling a portion of alveolar air by a non-airtight catheter means and monitoring the inert gas concentration of a portion of the alveolar air stream by non-airtight means,

(d) repeating cycles (b) and (c) until a steady state in the concentration of inert tracer gas is reached,

(e) continuing cycles (b) and (c) and monitoring the oxygen and carbon dioxide concentrations in the portion of the alveolar air stream at steady state inert tracer gas concentrations, and,

(f) determining the alveolar ventilation, carbon dioxide production and oxygen uptake from the monitored inert tracer gas, carbon dioxide and oxygen values.

4,221,225

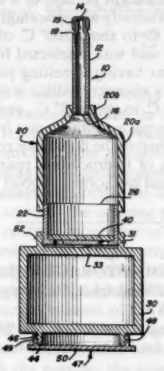
BODY CAVITY EXAMINATION DEVICE

Noah H. Sloan, 594 Linden, Elmhurst, Ill. 60126

Filed Nov. 13, 1978, Ser. No. 959,470

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—750 **9 Claims**



1. A body cavity examination device for alternately introducing fluid into a body cavity and then withdrawing the fluid and pieces of particulate matter suspended therein for examination, comprising:

a hollow member having a single opening extending therethrough, one end of said member comprising an open end portion adapted for positioning within the body cavity;

pump means in fluid communication with said hollow member for introducing said fluid into said body cavity through said hollow member and for withdrawing said fluid, with said pieces of particulate matter from the body cavity suspended therein, from said body cavity into said hollow member, said pump means having a first end secured to the opposite end of said hollow member;

a receptacle in fluid communication with said pump means;

means for sealingly engaging said receptacle to said pump means and providing selective removability of said receptacle from the remainder of said body cavity examination device; and

filter means positioned between said open end portion and said receptacle such that all fluid received in said receptacle passes through said filter means, said filter means providing fluid communication between said hollow member and said receptacle,

whereby said fluid is introduced into said body cavity by said pump means and is withdrawn from said body cavity at least in part by said pump means, and said fluid when withdrawn from said body cavity passes through said hollow member and then through said filter means into said receptacle, and said filter means selectively determines the size of the particulate matter that is received in the receptacle by collecting the larger pieces of particu-

late matter suspended in said fluid while permitting smaller pieces of particulate matter suspended therein to enter said receptacle.

4,221,226

HOT MELT ADHESIVE FOR BONDING FILTER TOW, AND FILTER ELEMENTS BONDED THEREBY

John E. Kiefer, Kingsport, Tenn., and Robert C. Mumpower, II, Bristol, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,413
Int. Cl.[3] A24D 3/08, 3/14
U.S. Cl. 131—267 8 Claims

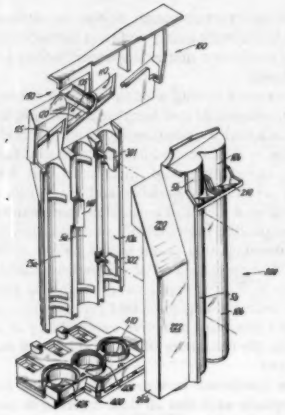
1. A tobacco smoke filter element comprised of filamentary tow selected from filaments of cellulose acetate, poly(ethylene terephthalate), polypropylene and polyethylene, said filaments being bonded together into a self-supporting filter element having a permeable surface with a hot melt adhesive comprising a blend of about 25 to about 75 weight percent wax and about 75 to about 25 weight percent of a tackifying resin, the blend having a melt viscosity at application temperatures ranging from about 100° C. to about 200° C. of less than about 50 centipoises, wherein said wax is selected from the group consisting of paraffin wax having a melting point from about 55° C. to about 71° C., a microcrystalline wax having a melting point from about 62° C. to about 77° C., and a Fischer-Trospsh hydrocarbon wax having a melting point from about 83° C. to about 103° C., and wherein the tackifying resin is selected from the group consisting of hydrocarbon resins and polyterpene resins having a ring and ball softening point from about 100° C. to about 140° C.

4,221,227

SEPARABLE COIN STORAGE TUBE ASSEMBLY

Frederic P. Heiman, Philadelphia, Pa., assignor to Mars, Incorporated, McLean, Va.

Filed Aug. 9, 1978, Ser. No. 932,320
Int. Cl.[3] G07D 3/04
U.S. Cl. 133—3 D 9 Claims



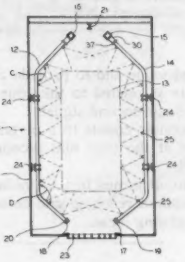
1. A device for sorting storing and dispensing coins assorted according to denomination, the device comprising a coin dispenser mechanism, a rear coin tube segment adapted to be affixed within the vending machine, a front coin tube segment detachably assemblable with the rear segment, and fastener means to detachably secure the segments together, the front and rear segments, when assembled, together forming a plurality of generally vertical, cylindrical, coin storage tubes, the front and rear segments being separable in the vicinity of a plane which includes the coin tube axes, the front and rear segments having means to align the segments when assembled, the fastener means comprising a cam lock rotatably carried by the rear segment, the cam lock having a shaft surmounted by a tab portion which passes through a slot formed in the front segment and located between adjacent coin tubes, the tab portion being adapted to cam against the exterior of the adjacent coin tubes when the cam lock is rotated to a position transverse to the slot, one of the front and rear segments including a coin track along which coin roll and coin sorting apertures along the track, each of the apertures being sized to pass a particular denomination coin to allow that coin to enter the appropriate coin tube.

4,221,228

PIECE PART WASHER

Robert P. Stoffel, Roselle, and Bruno J. Ezerski, LaGrange, both of Ill., assignors to Advanced Curing Systems, Inc., Chicago, Ill.

Filed Sep. 15, 1978, Ser. No. 942,617
Int. Cl.[3] B08B 3/02
U.S. Cl. 134—199 1 Claim



1. In an industrial piece-part washer of the type having a plurality of upstanding hollow riser pipes, each said riser pipe having two ends, each said riser pipe communicating with a supply header, and riser pipes and said supply headers defining a flow path for a selected wash fluid, said riser pipes having nozzles disposed therealong to direct said wash fluid from the interior of said riser pipe to contact an article to be washed, the improvement comprising:

a pair of said supply headers arranged in overhead horizontal parallel spaced relationship;

forming each said riser pipe as a single, uninterrupted run of piping;

joining a plurality of said riser pipes to depend from each said supply header, forming parallel ranks of riser pipes,

each said riser pipe having two bends formed therealong,

a first riser segment extending from the first of said ends to the first of said bends,

a second riser segment extending from the first of said bends to the second of said bends,

a third riser segment extending from the second of said bends to the second of said ends,

each said riser pipe joined to one said supply header at the first of said ends, forming a straight run of pipe from said supply header to the first of said bends,

said bends formed to disposed said second riser segment in a vertical orientation when said riser pipes are joined to said supply headers,

said riser pipes in one said rank extending toward said riser pipes in the remaining said rank,

said first riser segment and said third riser segment of each said riser pipe angled toward said second riser segment with the angle between said first and second second riser segments and said second and third riser segments, respectively, being greater than 90°; and

an end cap non threadably attachable to the second end of

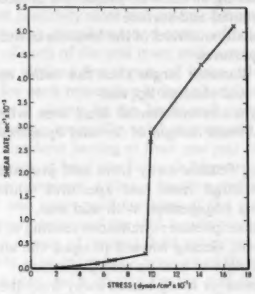
each said riser pipe to at least partially impede the flow of wash fluid through said riser pipe and allow said wash fluid to be directed to said nozzles.

4,221,229

RETRO-VISCOUS FLUIDIC FLUID

Karl D. Dreher, and William B. Gogarty, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Mar. 10, 1976, Ser. No. 665,661
Int. Cl.[2] C01M *1/40*
U.S. Cl. 137—13 **14 Claims**



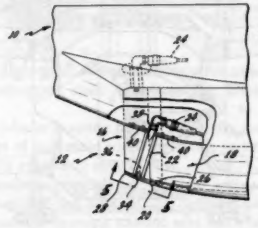
1. In a process for using a fluidic fluid for controlling fluid systems, the improvement comprising using as the fluidic fluid, a liquid composition which contains lamellar micelles whose axial ratio is at least 3.5.

4,221,230

VARIABLE AIR INLET FOR A RAMJET POWERED MISSILE

George B. Nicoloff, and Clark Kerr, Jr., both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Dec. 11, 1978, Ser. No. 968,347
Int. Cl.[2] F02K *1/00*
U.S. Cl. 137—15.1 **7 Claims**



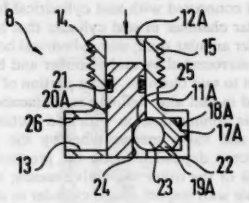
1. A variable inlet for a ramjet missile comprising,
means defining a non-jetisonable air inlet,
means defining at least one jetisonable air inlet disposed in front of said non-jetisonable air inlet,
said jetisonable air inlet including,
a plurality of relatively thin lip sections contoured to define an air inlet and forming an extension of said non-jetisonable air inlet, and
connecting means for releasably fastening said lip sections together and to the body of said missile and for forceably ejecting said lip sections at a selected time exposing said non-jetisonable air inlet.

4,221,231

THERMAL FUSE DEVICE

Samuel E. Harvey, Coventry, and Philip H. Pegram, Leamington Spa, both of England, assignors to Dunlop Limited, London, England

Division of Ser. No. 769,701, Feb. 17, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,346
Claims priority, application United Kingdom, Feb. 27, 1976, 77881/76
Int. Cl.[3] F16K *17/38*
U.S. Cl. 137—72 **9 Claims**



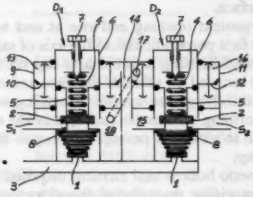
1. A thermal fuse device for deflating a pneumatic tire in response to a predetermined increase in temperature, the device comprising a housing having a passage for venting air from the tire, a control element movable in the passage between a position closing and a position opening the passage and biased only by pneumatic pressure in the tire when the housing is attached thereto towards the opening position, a latch element positioned to obstruct movement of the control element to the opening position and being urged toward a non-obstructing position by axial movement of the control element toward the opening position, a plug of a fusible composition positioned to obstruct movement of the latch element and an outlet discreet from said passage through which the fusible composition can flow when melted without being cooled by air venting through the passage, the arrangement being such that the control element moves between positions fully closing and fully opening the passage in response to displacement of the latch element by the movement of the control element permitted by melting of the plug.

4,221,232

SHUT OFF VALVE UNITS OF DAMAGED SECTIONS IN PNEUMATIC MULTI-SECTION BRAKING SYSTEMS OF VEHICLES

Enzo Fantozzi, Sesto San Giovanni, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed Feb. 10, 1978, Ser. No. 876,751
Claims priority, application Italy, Feb. 11, 1977, 20202 A/77
Int. Cl.[2] B60T *17/22*
U.S. Cl. 137—118 **4 Claims**



1. Shut off unit for a damaged section of a multi-section pneumatic braking system for a vehicle, comprising:
a common pressure supply conduit;
at least two valve means supplied by said supply conduit; each said valve means comprising:

a section conduit leading away from said valve means at the other side of said valve means from said supply conduit;
a shut off valve element shiftable between positions for blocking and opening communication between said supply conduit and said section conduit; a spring for normally biasing said valve element to said blocking position;
a pneumatic pressure device for selectively loading said spring dependent upon and corresponding to the pneumatic pressure in said pneumatic pressure device; said pneumatic pressure device comprising:
a cylinder in the form of an annular shell;
a piston including a cylindrical body; said spring being inside of and connected with said cylindrical body;
an annular chamber in said cylinder that is defined by said cylinder annular shell; said cylindrical body of said piston being surrounded by said chamber and being sealed with respect to said chamber, and a portion of said piston being located in and also defining said chamber; said chamber being in communication with said section conduit of the other said valve means, whereby the pressure in said chamber is dependent upon the pressure in said section conduit of the other said valve means; said piston being movable with respect to said cylinder so that as pressure in said chamber of one said valve means becomes greater, said piston thereof is shifted to increase the load upon the respective said spring.

4,221,233

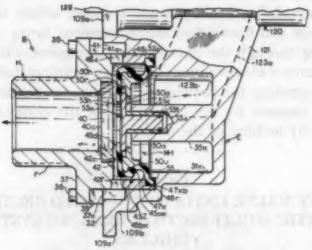
NON-FREEZE WALL HYDRANT

Irlin H. Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio 44124

Continuation-in-part of Ser. No. 425,503, Dec. 17, 1973, Pat. No. 3,952,770. This application Feb. 3, 1976, Ser. No. 654,866

Int. Cl.³ F16K *24/02*

U.S. Cl. 137—218 **14 Claims**



1. A vacuum breaker device comprising:
a housing including a first and a second housing member secured end-to-end and each hollow to provide water flow space therethrough,
said first housing member including a water inlet passage opening into a hollow enlargement providing an inner wall surface,
said enlargement opening endwise at and terminating in a flat end face perpendicular to the axis of said enlargement; said second housing member as a cap for the first having a flange secured on said flat end face and at one end adjacent the flange, an annular clamping end surface circumscribing an annular seal seat in the cap bounding a mouth to an outlet passage running to the other end of the cap;
an elastomeric hollow seal element disposed in said housing and comprising open-ended inner and outer end parts integrally joined, and a circumferential external flange whereby the seal element is clamped in circumferentially sealed relation to and within said enlargement,
with the outer end part including an annular inward lip defining an outlet opening of the seal element;
clamping means including said cap and first housing member cooperatively clamping the seal external flange and cooperatively forming air vent means
including at least one cap aperture beneath the flange region and
communicating across the said seat with said mouth;
an axially shiftable seal piston member to press the lip on the seal seat having
a head disposed within the hollow seal element and a formation cooperating with a part of said housing whereby the piston member is slideably guided in said housing, said head having therethrough a plurality of angularly spaced flow apertures located radially inwardly of the annular seat, and
said head bearing an endwise projection presenting a coaxial circumferential end surface
located axially outward of the location of outer ends of the head apertures,
having a diameter larger than the outlet opening of the hollow seal element lip, and
providing a circumferential head area whereon the peripheral inner margin of the said lip normally sealingly seats;
said lip being flexible away from said projection to permit water discharge from said apertures while effecting a vent-sealing engagement with said seat,
said lip, under pressure conditions tending to initiate water back flow, flexing inward to open the air vent means and sealingly to seat on said projection;
said piston member being biased away from the annular seat quickly to shift under vacuum condition at the inlet for withdrawal of the head and lip away from a vent-sealing relation with the annular seat,
thereby quickly to open the air vent means.

4,221,234

CLOSURE VALVES FOR USE IN COAXIAL FLOW SYSTEMS

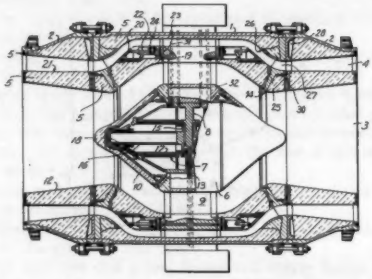
Julius Kruschik, Gumpoldskirchen, Austria, assignor to Klinger AG, Zug, Switzerland

Filed Mar. 17, 1978, Ser. No. 888,154

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712307

Int. Cl.² F16K *1/12, 31/122*

U.S. Cl. 137—219 **16 Claims**



1. An improved double-acting closure valve apparatus for use in a coaxial flow system, which closure valve comprises an inner pipe defined by a generally tubular wall having a longitudinal axis, an inner wall surface and an outer wall surface, an outer pipe defined by a generally tubular wall coaxial with the inner pipe and having an inner wall surface and an outer wall surface, an inner passage defined by the inner wall surface of the inner pipe an outer passage defined by each of the outer wall surface of the inner pipe and the inner wall surface of the outer pipe, said inner wall surface of the inner pipe being provided with a pair of axially spaced-apart inner profiled

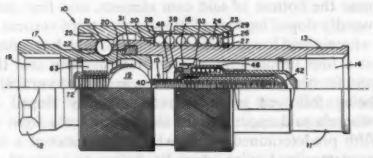
portions defining a pair of inner valve seats and said inner wall surface of the outer pipe being provided with a pair of axially spaced-apart outer profiled portions defining a pair of outer valve seats, an inner body located in the inner passage and disposed symmetrically with respect to the longitudinal axis of the inner pipe, a pair of inner valve closure members associated with the inner body for closure of the inner passage and a pair of outer valve closure members associated with the inner pipe for closure of the outer passage, said improvement comprising: providing said inner valve closure members to generally move axially away from one another and abut respective inner valve seats and said outer valve closure members each being capable of generally axial movement away from one another to abut respective said outer valve seats, and operating means capable of effecting said generally axial movement of the said inner and outer valve closure members to thereby effect the double-acting closure of each of the said inner and outer passages; said apparatus being defined by a pair of inner-valve operating elements, one for each respective inner valve closure member, disposed within a casing in the body and operating means capable of effecting generally axial movement of the outer valve closure members having at least one pair of outer-valve operating elements, at least one for each respective outer valve closure member, disposed within a housing provided between the said inner and outer wall surfaces of the inner generally tubular pipe; said casing and the said housing being in communication with a source of coolant fluid subjected to a pressure and controllable as to exceed the pressure of fluid in said inner and outer passages, each of said casing and housings being provided with fluid coolant apertures to allow escape of the said coolant fluid into said passages.

4,221,235

QUICK DISCONNECT COUPLING

Ojars Maldavs, Lincoln, Nebr., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 25, 1978, Ser. No. 936,661
Int. Cl.³ F16L *37/22, 37/28*
U.S. Cl. 137—614.04 **8 Claims**



1. A quick disconnect female coupling for coaction with a check valve-equipped male coupling, the female coupling comprising:

a generally tubular housing having an axially extending bore for receipt of said male coupling in one end thereof and a rearwardly extending poppet seat,

a shroud including a tubular portion and a closed end mounted within the bore of the housing and having an internal passage opening toward said one end of the bore and an inner guide surface,

a poppet slidably mounted in the internal passage of the shroud, the poppet having guide means spaced apart around its periphery for slidably engaging the guide surface of the shroud and guiding the sliding movement of the poppet within the shroud, the portions of the poppet between said spaced-apart guide means being spaced radially inwardly of the guide surface of the shroud for permitting flow of fluid into the internal passage of the shroud between the spaced guide means, said poppet having a sealing portion which does not slidably engage said inner guide surface,

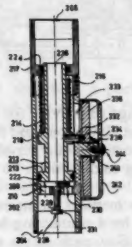
and first spring means within the shroud engaging said end for resiliently biasing the poppet sealing portion into engagement with the poppet seat on the housing when said female coupling is closed.

4,221,236

STEPPABLE MECHANISM AND VALVES INCLUDING SAME

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Mar. 6, 1978, Ser. No. 883,852
Claims priority, application Israel, Mar. 6, 1977, 51597; Jan. 27, 1978, 53907
Int. Cl.³ A01G *25/00*
U.S. Cl. 137—624.11 **22 Claims**



1. A steppable mechanism device, conprising: a first member formed with a series of interconnecting cam slots arranged in a closed loop around a central axis; a second member carrying a pin movable within said series of cam slots and reciprocatable with respect to the first member to effect a rotary movement in stepped increments of one member with respect to the other member around said central axis in a predetermined direction; said first member being a disc rotatable about an axis passing through its centre, said series of interconnecting cam slots being arranged in a star-shaped circular array around its centre axis, said second member being reciprocable to cause said pin carried thereby to effect the rotary movement of said disc in stepped increments; and a spring causing said pin to seat against the bottom of the slots as it traverses each in succession; each of said cam slots being of decreasing depth in said predetermined direction of rotation such that at each juncture of one slot with the next, the end point of the slot traversed is higher than the starting point of the next slot in said predetermined direction of rotation, to thereby define a shoulder between the two slots blocking the return movement of the pin in the traversed slot and constraining its movement only into the next slot in said predetermined direction of rotation: at least one of said cam slots being formed with an extension at its juncture with the next succeeding cam slot which extension is of the same depth as, and projects past, the starting point of the next succeeding slot thereby enabling said second member to move a longer stroke after stepping said first member a predetermined number of increments.

4,221,237

REFRIGERATION HEAT PUMP CHANGEOVER VALVE ASSEMBLY

Richard E. Nelson, Rancho Palos Verdes, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

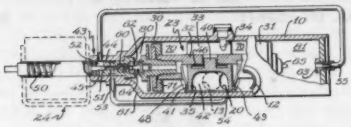
Filed Jun. 28, 1978, Ser. No. 920,044
Int. Cl.³ F16K *11/07*
U.S. Cl. 137—625.29 **7 Claims**

1. In a valve assembly adapted for use with a refrigeration heat pump system wherein a reversal of refrigerant flow is accomplished upon operation of the valve assembly to provide either heating or cooling to a dwelling, comprising,

a cylindrical shaped housing having first and second openings on one side and third and fourth openings substantially opposite said one side, said first and second openings

are spaced adjacent each other, said third and fourth openings are spaced adjacent each other,

movable valve member slidably mounted in said housing and movable between a first and second position, said valve member having a first portion for connecting said third opening to one of said first or said second openings when in said first position to provide substantially straight through refrigerant flow and when in said second position connecting said third opening to the other of said first and second openings, said valve member upon moving to one of said first and second positions, uncovers one of said first



and second openings to provide for substantially straight through refrigerant flow from said fourth opening,

actuator means connected to said movable valve member for selectively moving said member to said first or second position,

said movable valve member comprises first and second pistons connected by a connecting link, and

a member defining a flow path across said cylindrical housing, said member being connected to said connecting link so that depending upon the position of said valve member, flow is directed through said valve between said evaporator and or condenser line and said suction line.

4,221,238

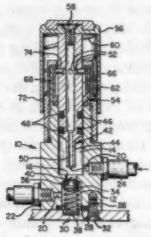
LINEARLY OPERABLE INTERMITTENT VALVE

Lamar Madsen, Vernonia, Oreg., assignor to Forest Medical Products, Inc., Forest Grove, Oreg.

Filed Jul. 7, 1978, Ser. No. 922,532

Int. Cl.³ F16K *31/524*

U.S. Cl. 137—627.5 **1 Claim**



1. A valve for interrupting fluid flow comprising:

(a) a valve body defining a cavity therein, said cavity being separated into an inlet chamber and an outlet chamber which are interconnected by a restrictive orifice, said outlet chamber opening out of said valve body and having an expanded diameter seat defined in the upper portion thereof;

(b) inlet means passing through said valve body into said inlet chamber and outlet means passing through said body into said outlet chamber;

(c) a poppet dimensioned to slidably fit within said inlet chamber and movable between a closed position wherein it prevents fluid flow to said orifice, and an open position wherein said flow is unrestricted, including poppet biasing means for normally urging said poppet to its closed position;

(d) reciprocative plunger means slidably mounted within said cavity and associated with said poppet for moving said poppet between said open and closed positions, wherein said plunger slidably fits partially within said outlet chamber and partially extends outwardly therefrom, and includes a reduced diameter extension which passes through said orifice into contact with said poppet when said plunger is depressed in said valve body, and has a central bleed passageway which passes from the distal extremity of said extension through said plunger;

(e) said poppet having a conical tip arranged to seal said passageway when said extension comes into contact with said poppet;

(f) plunger biasing means associated with said plunger for urging it outwardly in said outer chamber;

(g) cam means operably associated with said plunger means so that repeated activation of said plunger means causes said poppet to alternate between said open position and said closed position, said cam means comprising:

(1) a hollow cylindrical cam element, arranged to fit within said seat,

(2) said cam element including a circuitous track which extends about its inner periphery and which is defined by upper and lower surfaces of a recessed groove located in said cam element, said track comprising a first vertical leg, wherein said upper and lower surfaces are vertical and parallel to one another, which extends from near the bottom of said cam element upwardly to a first predetermined point on said cam element, said first vertical leg being followed by a first upwardly sloped leg, wherein said upper surface slopes upwardly from said first predetermined point, which terminates at a second predetermined point on said cam element, said second predetermined point lying above said first predetermined point, said first upwardly sloped leg being followed by a second vertical leg, wherein said upper surface extends vertically, which terminates at a third predetermined point intermediate said second predetermined point and the bottom of said cam element, said second vertical leg being followed by a first downwardly sloped leg, wherein said lower surface slopes downwardly from said third predetermined point, which terminates at a fourth predetermined point lying near the bottom of said cam element, said first downwardly sloped leg being followed by a third vertical leg, wherein said lower surface is vertical, which terminates at a fifth predetermined point intermediate said third and fourth predetermined points, said third vertical leg being followed by a second upwardly sloped leg, wherein said upper surface slopes upwardly from said fifth predetermined point, which terminates at a sixth predetermined point which lies below said second predetermined point, said second upwardly sloped leg being followed by a second downwardly sloped leg, wherein said lower surface slopes downwardly from said sixth predetermined position, which terminates at the bottom end of said first vertical leg;

(3) retention means for securing said cam element within said valve housing; and

(4) cam follower means joined to said plunger for engagement with said track;

(h) cover means associated with said plunger means for activating said plunger means merely by application of a linear downward force on said cover means.

4,221,239

INSULATED CONDUIT

Salvatore Reale, Preston, Md., assignor to Sunergy Corporation, Preston, Md.

Continuation-in-part of Ser. No. 886,243, Mar. 13, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,490

Int. Cl.³ F16L *9/22, 51/00, 9/14*

U.S. Cl. 138—149 **1 Claim**

1. An insulated conduit comprising:

(a) a section of tubing a series of resting blocks suitable for

resting piping upon with said blocks contained within said section of tubing,

(b) said tubing composed of suitable material with structural and homogenous integrity and having a matching configuration or means of adjoining or attachment to adjoining tubing through the use of a bell configuration at one end and an insertable spigot configuration at the other end which may be inserted into said bell end of an adjoining tube a certain distance,

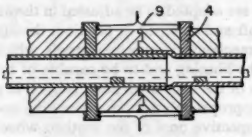
(c) an outer insulation jacket a series of ribs acting as spacers between said tube and said outer insulation jacket thereby providing an added means of structural stability to the assembly an by which means a dead air space is provided,

(d) a series of dead air spaces located between said ribbed arrangement thereby providing insulative value between said inner structural tubing and outer insulation jacket,

(e) an arrangement of anchors suitably placed and attached in an appropriate position and manner, thereby providing a means for attachment of a wire or other suitable binding material which may be utilized for the purpose of holding adjoining sections of insulated conduit together,

(f) an outer membrane or covering shielding the outside surface or perimeter of entire assembly of insulated conduit from penetration by moisture or transient moisture bearing vapors,

(g) an annular groove configuration located at one end of the outer insulation jacket allowing the joining of a matching tongue arrangement of the adjacent section of insulated conduit,



(h) an annular tongue configuration located at one end of the outer insulation jacket allowing the joining of a matching groove arrangement of the adjacent section of insulated conduit,

(i) a linear marking line arrangement visually or otherwise apparent whereby each section of insulated conduit may be assembled in a predetermined manner and thereby providing provision that the said resting blocks will be aligned in a suitable manner during fabrication and installation of individual sections of insulated conduit one with another,

(j) said spigot end of the inner structural tubing extends a certain distance from the area of the plane formed by the end circumference of the outer insulation jacket, with this certain distance being determined by the length of the spigot end of the inner structural tubing to be inserted into the bell end of the adjoining inner structural tubing sufficient in penetration to make a sound joint before contact between the annular tongue and groove arrangement of the outer insulation jacket occurs,

(k) wire means or other suitable binding material to be used for holding together adjoining sections of insulated conduit by means of attachment of or the wrapping of said material around anchors fastened to the insulated conduit,

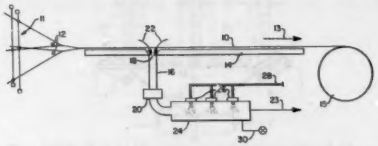
(l) installation means for said piping within said inner structural tubing with said piping having the capabilities of conducting energy from one point to another or for the transmission of liquids or gaseous elements.

4,221,240

APPARATUS AND METHOD FOR ABSORBING MOISTURE REMOVED FROM FLUID-JET LOOM

Jack L. Alexander, Sr., Greensboro, N.C., assignor to Air Conditioning Corporation, Greensboro, N.C.

Filed Sep. 29, 1978, Ser. No. 946,880
Int. Cl.[2] D03J *1/06*
U.S. Cl. 139—1 R **9 Claims**



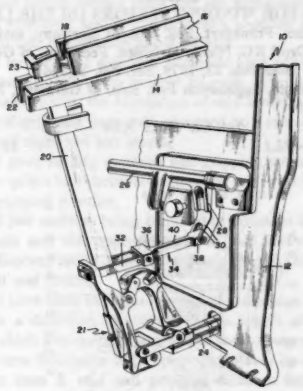
1. Apparatus for absorbing a portion of the moisture removed from material woven on a fluid-jet loom of the type which comprises means for forming a shed of warp yarns, fluid jet means for feeding weft yarns into the warp yarns for forming a length of woven material, an opening extending at least the width of said length of material, means for moving said material over the opening, means for pulling air through the opening for removing moisture from the length of material as it moves over the opening, said air having a temperature greater than that of the surrounding atmosphere, the improvement comprising means for reducing the temperature of said moisture-laden air to at least the dew point of the surrounding atmosphere for reducing the moisture content of said air before said air enters said surrounding atmosphere.

4,221,241

LUG STRAP CONNECTOR FOR LOOMS

Robert G. Mallard, Hopedale, Mass.

Continuation-in-part of Ser. No. 923,095, Jul. 10, 1978, abandoned. This application Jul. 13, 1979, Ser. No. 57,196
Int. Cl.[3] D03D *49/40*
U.S. Cl. 139—151 **9 Claims**



1. A lug strap connector for a loom picking mechanism having a swinging pick arm and a lug strap connected to a picker stick, said lug strap connected being made of high density polymer, comprising:

(a) an inner end for pivotal attachment to a pick arm,

(b) an outer end for clamping attachment to a lug strap, and

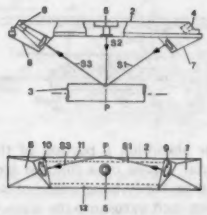
(c) an intermediate portion extending between the inner and outer ends and having a horizontal dimension which is substantially less than that of the outer and inner ends and substantially less than its vertical dimension.

4,221,242

OPTICAL FILLING OR WEFT BOBBIN FEELER

Werner Eichenberger, Zürich, Switzerland, assignor to Gebrueder Leopfe AG, Wetzikon, Switzerland

Filed Nov. 15, 1978, Ser. No. 960,826
Claims priority, application Switzerland, Nov. 30, 1977, 14641/77
Int. Cl.[2] D03D 45/12
U.S. Cl. 139—273 A 5 Claims



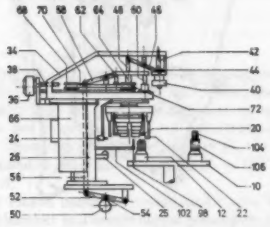
1. In an optoelectrical bobbin feeler on a shuttle weaving loom containing a bobbin and a slay beam, said optoelectrical bobbin feeler comprising a casing having at least one flat wall capable of being mounted substantially parallel to the slay beam, optoelectrical transducing means comprising a light source, and a light sensor having optical axes which intersect in a point outside the casing, the improvement which comprises: the light source and light sensor being arranged such that the optical axes thereof define a scanning plane which forms an acute angle with said at least one flat wall of the casing for receiving light emitted by said light source and reflected by the bobbin.

4,221,243

DEVICE FOR WINDING STATORS OR THE LIKE

Willi Muskulus, Frankfurt, Fed. Rep. of Germany, assignor to Balzer & Droll KG, Niederdorfelden, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,546
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808048
Int. Cl.[2] B21F 3/04
U.S. Cl. 140—92.1 13 Claims



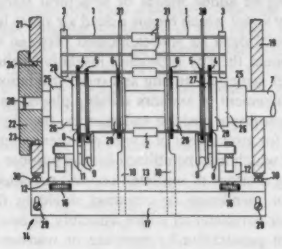
1. Apparatus for winding electrical windings comprising a winding form, a winding nozzle rotatable about said form for winding wire on said form, a collecting tool for receiving windings from said winding form, means for stripping windings from said form onto said collecting tool, means for clamping a wire between individual winding operations, and means for simultaneously moving said winding nozzle, stripping means and clamping means during stripping of said windings from said form onto said collecting tool.

4,221,244

APPARATUS FOR CUTTING TO LENGTH, CRIMPING AND/OR BENDING THE CONNECTING WIRES OF ELECTRIC COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,503
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814100
Int. Cl.[3] B21F 45/00
U.S. Cl. 140—105 10 Claims



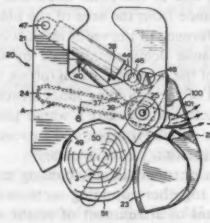
1. Apparatus for mechanically processing the connecting wires of electrical components, the apparatus comprising toothed wheels the spaces between whose teeth receive the connecting wires which are to be processed, all of which wheels are arranged coaxially, are adapted to be driven in rotational movement by a common main shaft mounted in a housing and are adapted to be adjusted in the axial direction of the main shaft and clamped in position, the apparatus further comprising mechanical processing tools which are arranged secured to the housing and to be capable of being adjusted in the direction of the main shaft and clamped in position, and to co-operate appropriately for the processing operation in each case with respective ones of the toothed wheels, wherein the main shaft has a bearing arrangement including at least one removal end of said shaft, whereby the main shaft is releasable so that the toothed wheels can be removed from the main shaft over the removal end when their clamping to said shaft is released, and wherein the processing tools are supported directly on the housing and are adjustable independently of the toothed wheels in the axial direction of the main shaft.

4,221,245

TREE HARVESTER WITH SAW AND SHEAR

Allan J. Wildey, Brantford, Canada, assignor to Koehring Canada Limited, Brantford, Canada

Filed Jan. 19, 1979, Ser. No. 4,812
Int. Cl.[2] A01G 23/08
U.S. Cl. 144—34 R 12 Claims



1. Tree cutting equipment comprising a saw assembly including a saw, a pivotable tree trunk shear blade assembly including a shear blade, means for rotating said saw assembly during the cutting of a tree about a pivot point toward said

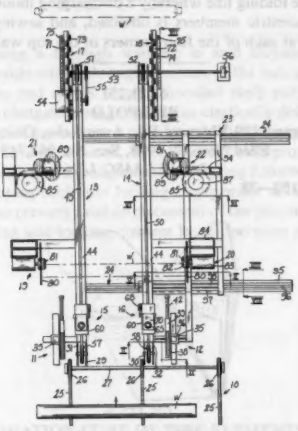
shear blade assembly, means for driving said saw in the same direction as said saw assembly rotates about said pivot point during the cutting of a tree, means for pivoting said shear blade assembly toward said saw assembly, and stop means carried by said shear blade assembly and engageable with said saw assembly to limit the extent to which said saw assembly can move relative to said shear blade assembly such that said saw can cut only part-way through a tree trunk located between said saw and said shear blade before engaging said stop means, said shear blade being located on one side of said pivot, said stop means being located on the opposite side of said pivot point.

4,221,246

FLOOR JOIST MACHINE

William G. Grutter, 611 Kingsbury N.W., Grand Rapids, Mich. 49504

Filed Aug. 3, 1978, Ser. No. 930,566
Int. Cl.³ B27F *1/08*
U.S. Cl. 144—198 R **6 Claims**



1. A machine for cutting tenon ends on structural logs comprising, a conveyor adapted to transport a log laterally from a supply end to a delivery end, log supporting means on the conveyor, the log supporting means including a clamp, first and second pairs of oppositely located saw assemblies positioned at spaced points along the path of the conveyor in positions to cut substantially simultaneously the opposite ends of the log as the log is moved by the conveyor, means associated with the log supporting means for rotating the log 90° after its ends have been cut by the first pair of saw assemblies and before reaching the second pair of saw assemblies, and driving means for the conveyor and for the saw assemblies.

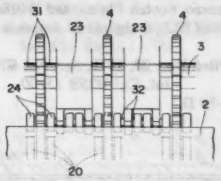
4,221,247

VENEER LATHE

Hasegawa Katsuji, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Dec. 16, 1977, Ser. No. 861,278
Claims priority, application Japan, Jan. 21, 1977, 52-6288
Int. Cl.² B27L *5/02*
U.S. Cl. 144—211 **21 Claims**

1. A veneer lathe comprising:
means for supporting a log rotatably about its axis;
a drive roller disposed in a facing relation to the log;
a knife oriented in tangential relation to the log;
a plurality of edge members mounted on the drive roller in at least one row around its periphery, said edge members being engageable with the log to rotate it when the drive roller is rotated;
pressure means disposed around said drive roller on at least one side of said row of said edge members to face the log surface slightly ahead of the edge of said knife; and
means for feeding the drive roller, the knife, and the pressure means toward the log, and means for rotating the drive



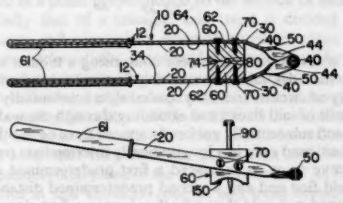
roller, such that said edge members on the drive roller come into piercing engagement with the log surface to rotate the log slightly ahead of the knife edge, said feeding means being adapted to continue the feed in accordance with the decrease in the log diameter.

4,221,248

NAIL HOLDER

Wesley J. Rix, Rte. 1, Box 137, Yutan, Nebr. 68073

Filed Apr. 19, 1978, Ser. No. 897,928
Int. Cl.³ B25C *3/00*
U.S. Cl. 145—46 **4 Claims**



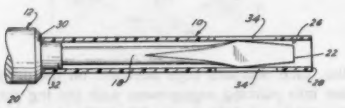
1. A nail holder having right and left elongated levers, means attaching said levers pivotally together at their forward end for rotation about an axis,
said levers being disposed alongside each other and being spaced apart with respect to each other in directions transverse to the elongation of said levers, right and left nail-gripping jaws each mounted on a respective one of said right and left levers,
said jaws having opposed nail-gripping surfaces adapted to grip a nail therebetween when said jaws are held in a gripping position,
said jaw surfaces being disposed in positions between said axis and the opposite ends of said levers and being disposed much closer to said axis than to said other ends of said levers,
said jaws each having a horizontal dimension as measured in a direction transverse to the length of said levers which dimension is more than the corresponding transverse dimension of the respective lever by a multiple of at least 2, said nail gripping surfaces forming a nail groove when said jaws are held in said gripping position, said nail groove being vertical and parallel to said axis, said levers extending at an acute angle upwardly with respect to said axis, said forward lever ends each being twisted 90° so that their forward ends are horizontal, said levers each having the same transverse cross-sectional shape substantially from their rearward ends forwardly to said jaws so as to be manufacturable from bar-stock, and the jaws protruding below said levers and defining a concave recess perpendicular to said nail groove and transversely extending with re-

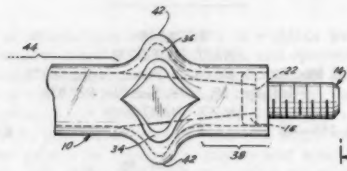
spect to said levers, said recess being for placement over the crest of corrugated sheet metal.

4,221,249
SCREWDRIVER ATTACHMENT

Charles F. Mazzeo, Scotch Plains, and William T. Waddington, Edison, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,086
Int. Cl.³ B25B *15/00*
U.S. Cl. 145—50 D **3 Claims**



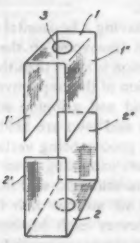


1. A screwdriver attachment comprising a tubular sleeve of flexible material, said sleeve having first and second ends and a plurality of circumferentially spaced slots substantially parallel to the axis of said sleeve and extending through the wall of said sleeve and substantially uniformly spaced from each other, said slots positioned only in a longitudinally intermediate portion of said sleeve so as to be spaced a first predetermined distance from said first end and a second predetermined distance from said second end, said sleeve further having a first circumferentially continuous end portion between said slots and said first end and a second circumferentially continuous end portion between said slots and said second end, such that said first end portion may grip the head of a screw and said second end portion may grip the shaft of a screwdriver.

4,221,250
METHOD FOR MAKING A GREAT CAPACITY BAG AND THE RELATED IMPROVED BAG

Giancarlo Manerba, Via Piave, 38, Leggiuno (Varese), Italy

Filed Jul. 5, 1978, Ser. No. 922,060
Claims priority, application Italy, Dec. 1, 1977, 30269 A/77
Int. Cl.³ B65D *33/28, 33/38*
U.S. Cl. 150—3 **5 Claims**



1. A method of manufacturing a bag which consists of folding a first rectangular member so as to form a first U-shaped panel having a central portion and two side portions essentially perpendicular thereto, folding a second rectangular member so as to form a second U-shaped panel having a central portion and two side portions essentially perpendicular thereto, placing said first U-shaped panel in an inverted position on top of said second U-shaped panel whereby the edges of the two side portions of the second panel are in contact with the edges of the central portion of the first panel, joining said first and second U-shaped panels along the edges thereof to form a bag of prismatic shape, said bag having a top wall formed from the central portion of said first U-shaped panel, a bottom wall formed from the central portion of said second V-shaped panel, and four side walls, making a circular orifice in said top wall, placing a cylindrical body over said orifice and seaming said cylindrical body along an edge thereof to the edge of said orifice to provide a loading mouth, making a second circular orifice in said bottom wall, placing a tubular element along the edge of said second circular orifice, folding said tubular element to form two concentric members and seaming said two concentric members to the edge of the second circular orifice along the folding line whereby a discharging mouth formed by two concentric members is obtained, and sewing a gripping member at each of the four corners of the top wall of the bag.

4,221,251
BILLFOLD

Carl Wagner, 199 Vineyard Rd., Avon Lake, Ohio 44012

Filed Nov. 17, 1978, Ser. No. 961,748
Int. Cl.² A45C *1/06*
U.S. Cl. 150—38 **3 Claims**

1. A billfold comprising a generally rectangular central portion with a truncated triangular corner portion removed from a shorter side and an otherwise non-indented periphery and having a single fold on its longitudinal centerline and a single fold on its lateral centerline, a generally square tab attached to one of its shorter sides, and a truncated triangular tab attached to its other shorter side.

4,221,252
LOCKING ARRANGEMENT PARTICULARLY FOR SHACKLES

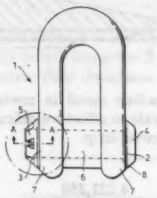
Peter Bruce, "Le Victoria", App. 5e-etage-Bluc D, Princesse Charlotte, Monte Carlo, Monaco

Filed Apr. 28, 1978, Ser. No. 901,306
Claims priority, application United Kingdom, Apr. 28, 1977, 17717/77; Apr. 28, 1977, 17718/77
Int. Cl.² F16B *39/02*
U.S. Cl. 151—5 **8 Claims**

1. A locking arrangement for locking an annular member against movement on the end of a rod-like member, comprising an axial recess in said end of the rod-like member, aligned through-bores extending transversely in said rod-like member and opening into said axial recess, aperture means in said annular member alignable with said through-bores, a locking element located in said recess and including a waisted passage alignable with the through-bores, said passage including convex resilient walls defining throated wedge means, a pin insertable between the aperture means and the through-bores to locate the annular member, said pin having an annularly-symmetrical necked portion, which co-operates with said wedge

means of the locking element to prevent axial displacement of the pin, the resilient walls of the locking element being deformable by the pin during pin insertion and pin removal, and means for positioning said locking element in an operative position.

7. In combination a shackle comprising a U-form member; a bolt extending through facing through bore at the ends of the U and having a bolt head at one end and a threaded shaft portion at the other end; a nut for said threaded shaft portion to secure the bolt and including laterally extending facing through apertures; and a locking arrangement for the nut and



bolt comprising a through aperture in said threaded shaft portion alignable with a through aperture of the nut, a locking element in an end recess of said threaded shaft portion and including an elongate passage having an elastically deformable wall defining wedge means, a pin insertable in the passage and deforming said wedge means, indent means being provided on the pin permitting said wedge means following deformation by the pin to spring back into locking engagement with said indent means to prevent axial displacement of the pin, and means for positioning said locking element in an operative position.

4,221,253

RADIATION CURE OF TIRE ELEMENTS

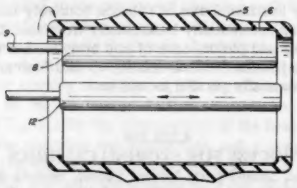
Theophilus K. Seiberling, Akron, Ohio, assignor to Mildred Kelly Seibering and Frances S. Voke, both of Akron, Ohio

Division of Ser. No. 888,288, Mar. 20, 1978, which is a continuation of Ser. No. 627,136, Oct. 30, 1975, which is a continuation of Ser. No. 395,346, Sep. 7, 1973, Pat. No. 3,933,553, which is a continuation of Ser. No. 321,421, Jan. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 838,512, Jul. 2, 1969, abandoned. This application Apr. 20, 1979, Ser. No. 31,849

The portion of the term of this patent subsequent to Jan. 20, 1993, has been disclaimed.

Int. Cl.[3] B60C *5/02*; B29H *5/01*

U.S. Cl. 152—330 R **77 Claims**



66. A finished cured pneumatic tire in which at least a portion of one element of the tire, other than the tread, is partially cured by having been exposed to electron irradiation or other radiation having the same curing effect on the element, and the remainder of the cure of the tire was by other means.

4,221,254

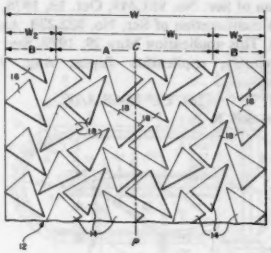
TREAD FOR PNEUMATIC TIRE

Charles W. Roberts, Akron; Michael A. Kolowski, Tallmadge; Daniel J. Lindner, North Canton; John E. Lynch, Bedford; Terrence M. Ruip, Akron, all of Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 14, 1978, Ser. No. 877,784

Int. Cl.[2] B60C *11/00*

U.S. Cl. 152—209 D **11 Claims**



1. A tread for a pneumatic tire consisting of a plurality of independent spaced buttons or projections placed circumferentially about said tire, the outer configuration of said projections as viewed in a plane perpendicular to the surface of said tire is substantially that of a triangle, said tread is divided into a central zone and two axially opposed shoulder zones which extend circumferentially about said tire, said shoulder zones extend from the longitudinal edges of said central zone axially outward to the tread edges of said tire, said central zone having a width ranging from about 60% to 80% of the width of said tread, all the edges of said projections in said central zone are oriented such that they form an angle with respect to the mid-circumferential plane of the tire from about 30° to 60°, said projections in said shoulder zone of said tread oriented such that all the edges of said projections form an angle with respect to the mid-circumferential plane of the tire from about 30° to 70°.

4,221,255

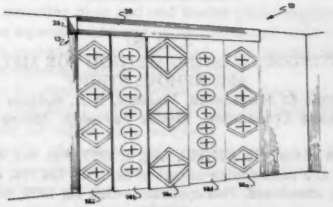
DECORATIVE PANEL ASSEMBLY

Erica C. Barkemeyer, 1695 Dominion Dr., Akron, Ohio 44313

Filed May 11, 1978, Ser. No. 904,787

Int. Cl.[2] E05D *15/06*

U.S. Cl. 160—197 **3 Claims**



1. A decorative panel assembly, comprising:

a valance having clips for maintaining decorative material thereon, said clips including a bottom clip secured about a bottom edge of said valance, and a top clip extending along a top edge of said valance and having a first edge received within said valance and a second edge in contacting engagement with said decorative material and securing the same against said valance;

a plurality of tracks maintained within said valance; and

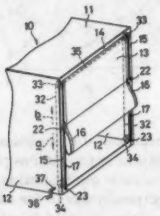
a plurality of panels maintained by and movable upon said tracks, said panels including removable resilient edge mouldings securing decorative materials to said panels.

4,221,256

SLIDE FASTENER-OPERATED TOP HOOD FOR TRUCKS

Takao Karaki, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 951,349, Oct. 13, 1978, abandoned, which is a continuation of Ser. No. 822,233, Aug. 5, 1977, abandoned. This application May 29, 1979, Ser. No. 43,308
Claims priority, application Japan, Aug. 9, 1976, 51-106296[U]
Int. Cl.[2] E06B *3/00*
U.S. Cl. 160—368 R **8 Claims**



1. A slide fastener comprising:

(a) a pair of fastener stringers having a pair of oppositely disposed stringer tapes each carrying a row of interlocking fastener elements along their respective inner longitudinal marginal edges;

(b) a pair of bottom end stops applied to the respective trailing ends of the respective inner longitudinal marginal edges of said stringer tapes;

(c) a slider having an upper wing, a lower wing, and a Y-shaped guide channel through which said rows of interlocking fastener elements are to be threaded, said guide channel being disposed between said upper and lower wings; and

(d) fastening means formed by parts of said upper wing and contoured to receive the trailing end portion of said row of interlocking fastener elements carried on one of said stringer tapes, and to secure said trailing end portion in fixed relation to said slider for movement therewith.

4,221,257

CONTINUOUS CASTING METHOD FOR METALLIC AMORPHOUS STRIPS

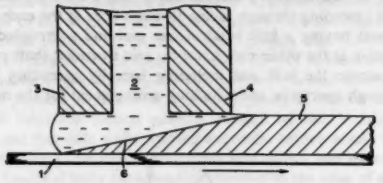
Mandayam C. Narasimhan, Flanders, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 821,110, Aug. 2, 1977, Pat. No. 4,142,571, which is a continuation-in-part of Ser. No. 734,776, Oct. 22, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 949,839
Int. Cl.[2] B22D *11/06, 11/10*
U.S. Cl. 164—87 **13 Claims**

1. A method of forming continuous strip of amorphous metal from a molten alloy capable of forming an amorphous structure comprising:

a. forcing the molten alloy under pressure through a slotted nozzle positioned generally perpendicular to the direction of movement of a chill surface and located in close proximity to the chill surface to provide a gap of from about 0.03 to about 1 millimeter between said nozzle and the chill surface;

b. advancing the chill surface, at a predetermined speed; and



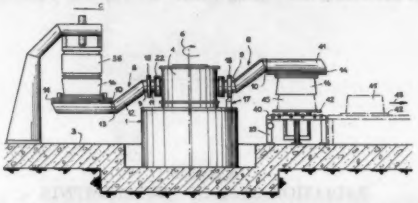
c. quenching the molten metal in contact with the chill surface at a rapid rate to effect solidification into a continuous amorphous metal strip.

4,221,258

CARROUSEL WITH A HORIZONTAL, FIXED CIRCUIT, COMPRISING SEVERAL SOLIDARY ARMS ON A ROTATING DRUM WITH A VERTICAL AXIS

Gerard Y. Richard, Precy sur Oise, France, assignor to Societe d'Applications de Procedes Industriels et Chimiques S.A.P.-.I.C., Asnieres, France

Filed Mar. 18, 1977, Ser. No. 779,078
Claims priority, application France, Mar. 22, 1976, 76 08264
Int. Cl.[3] B22C *17/10*
U.S. Cl. 164—181 **8 Claims**



1. A turret useful in foundry work for moulding and casting, said turret having a horizontal closed circuit, and comprising a plurality of arms rotatably mounted on and extending laterally from a rotating drum having a vertical axis of rotation, said drum being rotatably carried by a frame wherein said turret embodies a fixed rack disposed horizontally on the frame substantially along an arc of a circle, perpendicular to a part at least of the surface swept by the arms during rotation of the drum, and that each of said arms carries a pinion with a substantially horizontal axis of rotation, the teeth of which, upon meshing with those of the rack, cause rotation of the arm about its axis of rotation, each of said arms having a base with a substantially horizontal axis of rotation rotatably mounted on and extending substantially horizontally from said drum, said base carrying said pinion, each of said arms further having an intermediate portion inclined relative to said base and an end portion substantially parallel to said base.

4,221,259

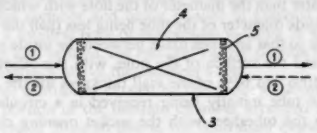
PROCESS FOR STORING CALORIES

Michel Ronc, Saint-Priest; Michel Perrut, Serezin du Rhone, and Patrick Valentin, Eyzin-Pinet, all of France, assignors to Elf Union, Paris, France

Filed Jan. 3, 1979, Ser. No. 704
Int. Cl.[3] F28D *21/00*
U.S. Cl. 165—1 **7 Claims**

1. A process for storing heat in the form of latent heat of fusion/solidification which comprises passing a thermo-con-

ductive fluid into a thermally insulated storage receptacle containing a substance having a melting point corresponding to the temperatures of introduction and withdrawal of heat,



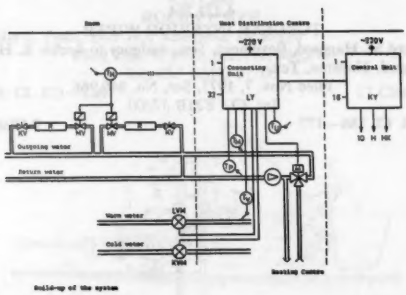
wherein the fusible substance is absorbed on a finely divided microporous carrier which comprises a granular bed in which the thermo-conductive fluid circulates.

4,221,260

CONTROL AND MEASURING SYSTEM FOR FLAT-INDIVIDUAL HEATING/COOLING AND PROCEDURE FOR THE SYSTEM'S CALIBRATION

Matti N. T. Otala, Oulu, and Lauri Kuokkanen, Oulunsalo, both of Finland, assignors to Insele OY, Kaukipudas, Finland

Filed Aug. 28, 1978, Ser. No. 937,420
Claims priority, application Finland, Sep. 1, 1977, 772591
Int. Cl.[3] G05D *23/00*; G01K *17/06*
U.S. Cl. 165—11 R **10 Claims**



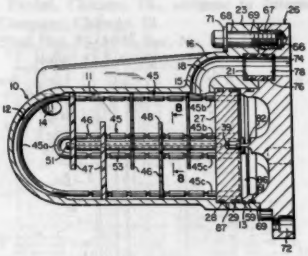
1. System for control and measurement of flat-individual heating/cooling, to the purpose of charging each flat individually for heating/cooling energy, said system comprising, as components previously known in themselves, room thermostats (T_H), which govern the valves (MV) of the heating radiators (R) or cooling evaporators, the thermostats and valves being of an on/off design, further, temperature measuring pick-ups (T_M, T_P) for the temperatures of the heating/cooling fluid on the outgoing and return side, and a connecting unit (LY) for transmitting the measurement data to a central unit (KY), which performs the processing of the data and the output, characterized in that the relative consumption of heating or cooling energy by the flats is measured by monitoring the proportion of the closed/open times of the valves (MV) of the heating radiators or cooling evaporators and by employing the temperatures of the heating or cooling fluid on the outgoing and return sides as weighting factors.

4,221,261

BRAZELESS HEAT EXCHANGER OF THE TUBE AND SHELL TYPE

John E. Wunder; George Hronek, and Thomas J. Gaudion, all of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Jul. 3, 1978, Ser. No. 921,464
Int. Cl.[3] F28D *1/04, 1/06, 7/06*; F28F *9/02*
U.S. Cl. 165—74 **11 Claims**



1. A brazeless heat exchanger of the tube and shell type, including

a. a tubular shell closed at one end and open at the other;

b. at least a portion of the open end of said shell being generally radially enlarged and having formed therein inlet and outlet flow passages for a shell side fluid opening at their one ends into the shell interior at longitudinally spaced apart locations therein;

c. opposite ends of said passages opening through said enlarged shell portion at the said open end of said shell;

d. a mounting plate fixed to said shell in a substantially closing relation to the said open end thereof;

e. said mounting plate having inlet and outlet openings for the shell side fluid aligning in the installation of said mounting plate with the said opposite ends of said inlet and outlet flow passages;

f. said mounting plate having other inlet and outlet openings for a tube side fluid;

g. a header plate confined by said mounting plate to a position within the open end of said shell;

h. said mounting plate and said header plate cooperating to define separated inlet and outlet chambered areas therebetween communicating respectively with the said inlet and outlet openings for the tube side fluid;

i. means for establishing a peripheral seal about said header plate inhibiting a mixing of tube side and shell side fluids around the header plate periphery;

j. a plurality of U-shaped tubes having their opposite ends fixed in apertures in said header plate and their intermediate portions accommodated in said shell;

k. at least certain of said tubes having their one ends communicating through said header plate with said inlet chambered area and their opposite ends communicating through said header plate with said outlet chambered area; and

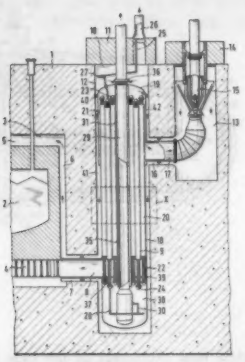
l. means for directing shell side fluid through said shell interior from said one end of said inlet flow passage for shell side fluid to the said one end of the outlet flow passage in a path taking it in plural passes over intermediate portions of said tubes.

4,221,262

HEAT EXCHANGER FOR THE TRANSMISSION OF HEAT PRODUCED IN A HIGH TEMPERATURE REACTOR TO AN INTERMEDIATE CIRCUIT GAS

Heinrich Baumgaertner, Ketsch, and Ekkehard Barchewitz, Mannheim, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH., Cologne, Fed. Rep. of Germany

Filed Nov. 4, 1977, Ser. No. 848,601
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2650922
Int. Cl.[2] F28D 7/10
U.S. Cl. 165—157 16 Claims



1. A heat exchanger apparatus comprising:
a heat exchanger casing mounted within a pod of a high temperature reactor pressure vessel;
a cover plate arranged for sealing said pod of the high temperature reactor pressure vessel;
a plurality of box members suspended within said casing, each box member having an outer guide sleeve member;
a plurality of tubular members disposed within each of said outer guide sleeve members;
a main distributor member mounted in said cover plate;
means for collecting fluid from each of said tubular members;
a plurality of fluid supply lines in communication with said main distributor member, each fluid supply line also communicating with a box member such that each of said box members are suspended within said heat exchanger casing from a fluid supply line;
a plurality of distributor caps, each cap attached to a box member and tubular members and one of said supply lines;
a central tube portion within said heat exchanger casing, housing a hot gas conduit in communication with a gas circuit of a process heat plant an inner gas conduit casing surrounding said hot gas conduit and an outer pressure casing surrounding said inner gas conduit casing; and
a reactor cooling supply conduit arranged for supplying hot cooling gas from a reactor core cooling circuit to the inside of said heat exchanger casing.

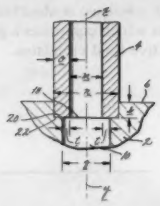
4,221,263

TUBE-TYPE VESSEL AND METHOD OF JOINING THE TUBES TO THE TUBESHEETS IN SUCH VESSELS

John J. Meyer, St. Louis, Mo., assignor to Nooter Corporation, St. Louis, Mo.

Filed Apr. 6, 1978, Ser. No. 894,025
Int. Cl.[3] F28F 9/18
U.S. Cl. 165—173 5 Claims

1. In a vessel such as a heat exchanger, the improvement comprising: a tubesheet having a front face, a flat back face and a plurality of closely spaced circular holes exposed from the front face of the tubesheet; and circular tubes joined to the tubesheet at the holes, there being a separate tube aligned with each hole such that the axis of a tube and the axis of its corresponding hole are coincident and the interior of the tube opens into the hole, as to each tube the outside diameter of the tube being greater than the diameter of the hole with which it aligns and the inside diameter of the tube being less than the diameter of the hole so that an offset exists between the inside surface of the tube and the surface of the hole, with the offset ranging between 40% and 60% of the wall thickness for the tube, the end of the tube initially being received in a circular socket formed in the tubesheet with the socket opening out of the back face of the tubesheet and having its axis coincident with



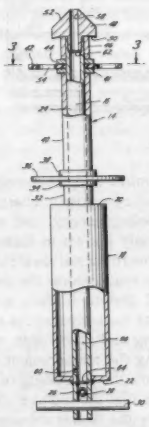
the axis of the hole and tube, the depth of the socket being between 30% and 120% of the thickness of the tube wall, the tube being joined to the tubesheet by a weld that is formed autogenously in a single pass from within the hole, the weld completely penetrating the end of the tube within the socket and extending both radially beyond the circular surface of the socket and axially beyond the base of the socket to completely obliterate the socket, the weld forming a fillet between the exterior surface of the tube and the back face of the tubesheet, so that no crevice surrounds the tube at the location where it enters the tubesheet, and further forming a beveled transition beteen the interior surface of the tube and the surface of the hole.

4,221,264

TUBULAR INTERIOR WIPER

Ward M. Haggard, Beaumont, Tex., assignor to Archie K. Haggard, Houston, Tex.

Filed Nov. 7, 1977, Ser. No. 848,966
Int. Cl.[2] E21B 37/00
U.S. Cl. 166—177 9 Claims



1. A wiper for wiping liquids from the interior walls of a bore of a tubular member as it is removed from a bore hole comprising,

an elongate, cylindrical mandrel,

an elongate, bouyant chamber closed at its bottom and top, secured about a lower portion of the mandrel, the chamber effective to float the wiper in liquids in the bore of the tubular member and being smaller in external diameter than a smallest bore of the tubular member in which the wiper is to be used, the mandrel's upper portion extending substantially above the chamber's top,

a flexible centralizer carried by the wiper adjacent the bottom portion of the buoyant chamber arranged to permit movement of liquid past it, the centralizer extending outwardly sufficiently to engage a largest bore of the tubular member thereby centralizing the bottom portion of the wiper in the bore of the tubular member and flexible enough to readily pass through the smallest bore of the tubular member,

first and second flexible wipers comprised of flexible discs provided with drain openings through them, the wipers extending outwardly far enough to engage and wipe the largest bore and flexible enough to readily retract to pass through and wipe the smallest bore of the tubular member,

means securing the first wiper to the mandrel adjacent its top portion,

means securing the second wiper to the upper portion of the mandrel above the top of the buoyant chamber,

the first and second wipers being axially spaced from one another a distance sufficient to permit ready passage through the smallest bore of the tubular member and to centralize the wiper's upper portion in the bore of the tubular member,

whereby the wiper floats in the liquid in the bore with the wipers above the liquid, and as the tubular member is removed from the well bore, the wipers wipe the bore of the tubular member of liquid and any of the liquid above the wipers drains through the drain openings, and

means for equalizing pressure within the buoyant chamber with pressure in the well bore.

4,221,265

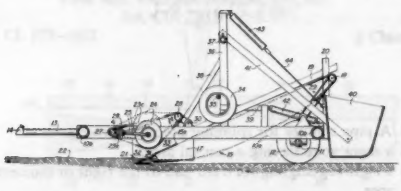
ROCK PICKER

Leslie J. Pratt, Box 197, Aberdeen, Id. 83210

Filed Dec. 9, 1977, Ser. No. 858,970

Int. Cl.[2] A01D *17/00*

U.S. Cl. 171—126 **17 Claims**



1. A vehicle for removing superficial and near superficial rocks scattered about a field, comprising a wheeled chassis which includes an elongate frame of structural members; a lower, elongate, endless conveyor of draper chain type having width extending transversely of said frame and one end disposed adjacent to ground level at the forward end of said chassis, said conveyor sloping upwardly toward the rearward end of the chassis; a scraper blade substantially commensurate in width with and secured in advance of but adjacent to such lower end of said conveyor and merging substantially smoothly thereinto as a ramp for lifting rocks onto said lower end of the conveyor as the vehicle travels over a field; an upper, relatively short, endless conveyor of draper chain type having width substantially commensurate with that of the lower conveyor and a widespread, substantially V configuration on its underside and being mounted in said frame above said blade and said lower end of the lower conveyor for up and down movement relative to said blade and lower conveyor so there is a throat with entry and discharge bights between the two conveyors that will accept and accommodate rocks of different sizes and shapes; wheels mounted for up and down movement with the upper conveyor and positioned to maintain the vertex of said upper conveyor of rounded formation; means for driving the lower conveyor so that its upper run travels rearwardly; and means for driving the upper conveyor so that its lower run travels rearwardly.

4,221,266

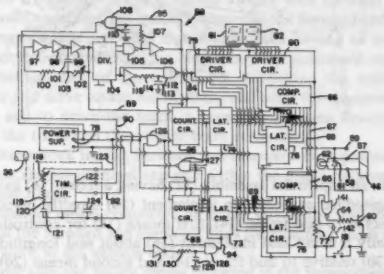
DIGITAL MEMORY DEPTH TILLAGE SYSTEM

Randolph G. Fardal, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 13, 1978, Ser. No. 951,210

Int. Cl.[3] A01B *63/114*

U.S. Cl. 172—4 **8 Claims**



1. In a control for an agricultural implement including frame means, supporting wheel means journalled on said frame means, a working element supported from said frame means for raising and lowering movements relative to said supporting wheel means, a main raise-lower control manually operable by an operator, and a hydraulic system controlled from said raise-lower control for raising and lowering said working element, the improvement comprising:

transducer means for developing an electrical signal corresponding to the vertical position of said working element relative to said supporting wheel means;

digital position signal means responsive to said electrical signal from said transducer means for developing a present position digital signal corresponding thereto;

clock circuit means for developing a first signal in the form of clock pulses occurring at a relatively high frequency and a second signal in the form of interrogation pulses occurring at a lower frequency, means applying said interrogation pulses to said transducer means, said transducer means being operative in response to each interrogation pulse to develop an output signal having a duration corresponding to the vertical position of said working element, said digital position signal means comprising counter means for counting of said clock pulses, and control logic means responsive to said output signal for controlling counting of said clock pulses by said counter means;

digital signal storage means for storing a desired position digital signal corresponding to that developed by said digital position signal means when said working element is at a desired position relative to said supporting wheel means; and

digital signal comparator means for comparing said present position digital signal from said digital position signal means and said desired position digital signal from said digital signal storage means to develop an output signal when said desired position and present position signals are equal.

4,221,267

ANGLE AND TILT IMPLEMENT ASSEMBLY

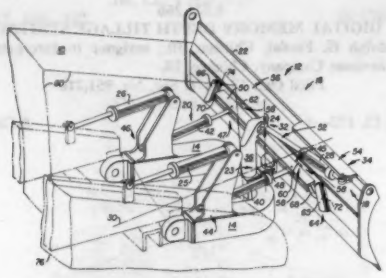
Jerrold R. Asal, Joliet, and James A. Olthoff, South Holland, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00045, § 371 Date Jan. 29, 1979, § 102(e) Date Jan. 29, 1979, PCT Pub. No. W080/01584, PCT Pub. Date Aug. 7, 1980

This PCT application Filed Jan. 29, 1979, Ser. No. 12,163

Int. Cl.[3] E02F 3/76

U.S. Cl. 172—804 16 Claims



1. In an implement assembly (12) having a frame (14) having a longitudinal axis (30), an implement (16) directly pivotally connected to said frame (14), first means (18) for controllably pivotally moving said implement (16) about said longitudinal axis (30) relative to said frame (14) and second means (20) for controllably pivotally moving said implement (16) in a plane passing through said longitudinal axis (30) relative to said frame (14), said frame (14) being of a construction sufficient for supporting said implement (16), the improvement comprising:

a subframe (50) pivotally connected to said frame (14) and said second means (20) and positioned adjacent and in contactable relationship with said implement (16); and

said implement (16) being pivotally movable about said longitudinal axis (30) along said subframe (50) and pivotally movable in said plane with said subframe (50).

4,221,268

SLIDE RAIL ASSEMBLY FOR A WORK VEHICLE

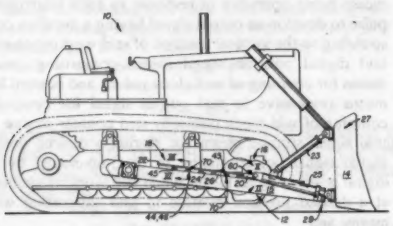
Gary P. Freese, Joliet, and Robert J. Trayler, Braidwood, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US78/00250, § 371 Date Dec. 21, 1978, § 102(e) Date Dec. 21, 1978, PCT Pub. No. W080/01296, PCT Pub. Date Jun. 26, 1980

This PCT application Filed Dec. 21, 1978, Ser. No. 14,018

Int. Cl.[3] E02F 3/76

U.S. Cl. 172—805 9 Claims



1. In a slide rail assembly (18) having a rail (22) and first and second spaced apart legs (24,26), said legs (24,26) each having first and second ends (32,34;36,38) and a plurality of relief openings (44,46) and each being connected at their respective first ends (32,36) to and positioned along said rail (22) and defining a channel (40) with said rail (22) between the legs (24,26), said rail (22) having a plurality of openings (48) passing through said rail (22) and into communication with said channel (40), said relief openings (44) of the first leg (24) each being generally in alignment with a respective one of the relief openings (46) of said second leg (26) across the channel (40) and each being positioned adjacent a respective one of said openings (48) of the rail (22), the improvement comprising:

a plurality of brace elements (68) each having an opening (66) and each being connected to and extending between said first and second legs (24,26), said openings (66) in the brace elements (68) each being in register with a respective one of the openings (48) in the rail (22);

a plurality of bushings (50) each having first and second end portions (52,54), said first end portions (52) each being positioned in a respective one of the openings (48) in the rail (22), said second end portions (54) each extending downwardly into the channel (40) between the legs (24,26) and each being positioned in the respective one of the openings (66) in said brace elements (68) in register with the related respective one of the openings (48) in the rail (22); and

said relief openings (44,46) of the first and second legs (24,26) each being of a "U" configuration opening on the second end (34,38) of the related one of the legs (24,26).

4,221,269

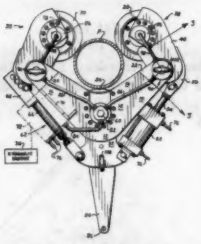
PIPE SPINNER

Ray E. Hudson, 118 O'Michael Bldg., Odessa, Tex. 79761

Filed Dec. 8, 1978, Ser. No. 967,586

Int. Cl.[2] E21B 3/00

U.S. Cl. 173—163 14 Claims



1. A pipe spinner for spinning pipe comprising:

a. a main yoke having a central area,

b. a right leg angling forward and to the right of the central area,

c. a left leg angling forward and to the left of the central area,

d. a torque arm tab extending directly back from the central area,

e. a torque arm bolted to the torque arm tab,

f. a pivot at the extreme end of the right arm,

g. a pivot at the extreme end of the left arm,

h. a swing arm pivoted to each pivot,

j. said swing arm having an ear extending on the outside,

k. a rotary hydraulic motor on the pipe side of said swing arm,

m. a hydraulic cylinder having one end pinned to the torque arm tab and having a rod extending from the other end,

n. said rod pinned to the swing arm ear,

o. said tab pin, said ear pin, said pivot and said rotary motor axis all being parallel,

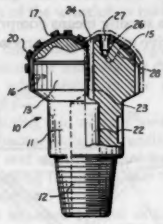
p. a rotary hydraulic motor at the central area of the yoke and the axis of all of said motors being parallel.

4,221,270

DRAG BIT

Edward Vezirian, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 18, 1978, Ser. No. 970,669
Int. Cl.[2] E21B 9/36, 13/01
U.S. Cl. 175—329 3 Claims



1. A rotary drag bit comprising:

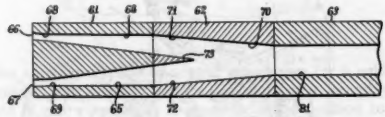
a main bit body having one end adapted to be connected to the lower end of a drill column, the other end comprising a head portion; and a single piece replaceable head cover made of tungsten carbide extending over said head portion, means detachably securing said head cover to said head portion, said head cover having a plurality of projections integrally formed thereon, each projection formed of the same material as said head cover, each projection having a planar surface, a cutting element including a quantity of synthetic diamond material bonded to the planar surface of each said projection and each of said cutting elements being in the form of a semi-circular disc having a cutting edge.

4,221,271

WATER JET CUTTING NOZZLE TRANSITION SECTION

Clark R. Barker, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Apr. 10, 1978, Ser. No. 894,768
Int. Cl.[2] E21B 7/18
U.S. Cl. 175—422 2 Claims



1. A high pressure liquid jet system for cutting and drilling of geologic and other materials comprising:

a source of high pressure for pumping liquid in the system;

a nozzle constructed of relatively hard metal and formed with a plurality of exit orifices and internal bores opening into said orifices for delivering liquid at high velocity to the material to be cut;

a conduit interconnected between said source and said nozzle and formed with a predetermined internal bore;

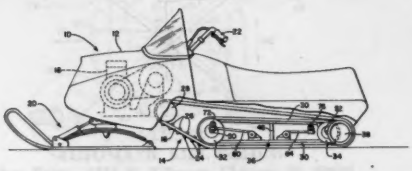
a transition section constructed of metal relatively softer than the metal of said nozzle and interconnected between said nozzle and said conduit and being formed with a matching bore structure at one end for each of said nozzle bores and at the other end a matching bore for the conduit bore, said transition section defining a matched smooth flow directing path between said conduit bore and said internal nozzle bores.

4,221,272

TRACKED VEHICLE SUSPENSION

Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 21, 1978, Ser. No. 944,486
Int. Cl.[2] B62D 55/08; B62M 27/02
U.S. Cl. 180—190 16 Claims



1. In a track type vehicle having a body with forward and rearward ends, steering means mounted at the forward end, an endless flexible reinforced elastomeric track having an inside surface and ground engaging outside surface positioned on the longitudinal axis of the vehicle for propelling the vehicle, motor and drive means mounted on said body for engagement with and to drive the track, a suspension system associated with the track and the vehicle body comprising:

a framework having forward and rearward ends positioned on the longitudinal axis and within the inside pathway of the track;

mounting means connected on either side of the framework at the forward and rearward ends for attaching the framework to the vehicle body;

a first axle and pulley means mounted at the forward end of the framework;

a second axle and pulley means mounted at the rearward end of the framework;

means at the rearward end of the framework for mounting track engaging pulleys and positioned outside and rearwardly of the second axle pulleys; and

at least one endless belt mounted between the first and second axle pulleys and engaging the track on its bottom inside surface so as to be driven at substantially the same speed as the track;

said vehicle track having drive lugs on its inside surface and said belt mounted between first and second axial pulleys comprising high modulus tensile cords embedded therein nearer the inside surface, and a layer of substantially incompressible material forming the outside surface, said belt having a plurality of notches formed therein in an alignment and sequence to receive and interlock with the drive lugs on the inside surface of the track, said interlocked suspension belt notches and track drive lugs and the separation of the tensile cords of both the belt and track combining to effect a resistance to back-bending such that the track conforms to the terrain over which it passes.

4,221,273

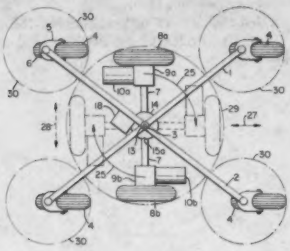
STEERABLE AND MOTOR-DRIVEN UNDERCARRIAGE

Per O. Finden, Skarer, Norway, assignor to Sentralinstitutt for Industriell Forskning, Oslo, Norway

Filed Mar. 7, 1978, Ser. No. 884,197
Claims priority, application Norway, Mar. 15, 1977, 770901
Int. Cl.[2] B62D 61/10
U.S. Cl. 180—6.48 11 Claims

1. A controllable, motor-driven undercarriage, comprising a first load-carrying frame having freely rotatable supporting wheels and a second frame having traction wheels, said frames being mounted about a vertical center axis for relative rotary motion with respect to one another, said second frame is a two-armed lever which at each end carries a traction wheel and an independently controllable driving means connected to

each said traction wheel, and locking means for selectively locking said first frame and said two-armed lever relative to



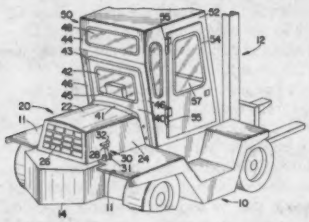
one another in various lockable rotatable positions about said vertical center axis.

4,221,274

LIFT TRUCK CAB WITH MOVABLE BACK WALL PORTION

Robert P. Martin, Jr., 12576 Lake Ave., Lakewood, Ohio 44107

Filed Feb. 12, 1979, Ser. No. 11,518
Int. Cl.[2] B62D *27/06*
U.S. Cl. 180—69 R **8 Claims**



1. In a rear engine lift truck having a wheel-supported body with a rearwardly located engine compartment enclosed in part by an upwardly movable hood hinge mounted at its forward end to the body, an operator cab mounted on top of the body comprising:

a front panel, a pair of side panels, and a top panel, at least one of the side panels providing door means for operator access and egress; and

a back panel having a portion fixed relative to the front, side and top panels, and a movable portion fixed to the movable hood, the panels collectively defining a generally cubical cab interior, the hinged forward end of the hood extending into the cab interior, the movable portion of the back panel being swingable into the cab interior and separable from the fixed portion of the back panel when the hood is raised upwardly for pivotal movement about its hinged forward end.

4,221,275

MOTOR-ASSIST VEHICLE

William B. Pennebaker, Box 66, Crane Rd., and Jan P. Hoekstra, 41 N. Gate Rd., both of Carmel, Putnam County, N.Y. 10512

Filed Apr. 28, 1978, Ser. No. 900,851
Int. Cl.[2] B62M *7/10*
U.S. Cl. 180—206 **4 Claims**

1. A pedal-operated vehicle having at least two wheels,

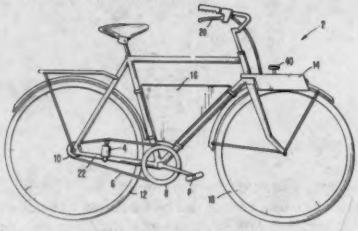
a pedal gear and a gear attached to a first of said wheels,

a drive chain connecting both said gears so that rotary pedal motion imparted by a driver of said vehicle to said pedal gear will cause said first wheel to rotate,

a battery-powered motor attached to said vehicle and capable of imparting the same sense rotary motion to another wheel of said vehicle as said drive chain imparts to said first wheel,

means for sensing increases in chain tension during pedalling of said vehicle,

said chain tension sensing means comprising a plunger actuable by said drive chain and interposed between a source



of light and and a light-sensing means, said plunger having a slit therein so that, when said chain tension increases, more of said slit becomes interposed between said light-sensing means and light source so as to increase the amount of light passing from light source to light-sensing means, and

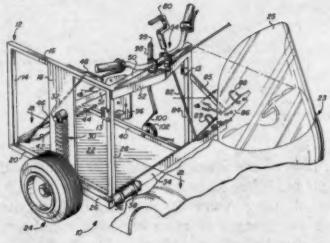
means connecting said chain tension sensing means to said motor so that increased chain tension will cause said motor to impart increased rotary motion to said other wheel during pedalling.

4,221,276

MOTORCYCLE CONTROLLING SIDECAR FOR HANDICAPPED PERSONS

John C. Mitchell, 2612 W. Pierson, Phoenix, Ariz. 85017, and Thomas N. Terning, 7501 N. Hoover, Valley Center, Kans. 67147

Filed Jul. 21, 1978, Ser. No. 927,133
Int. Cl.[3] B62K *27/02, 27/12, 23/02*
U.S. Cl. 180—209 **8 Claims**



1. A sidecar for attachment to a motorcycle including a frame, a motor supported by the frame for powering the rear wheel of the motorcycle, a front fork assembly connected to the frame, a foot-actuatable gear shifting lever, and a foot-actuatable brake lever, said motorcycle and sidecar being easily drivable by a driver seated in a wheelchair, said sidecar comprising in combination:

(a) a support frame;

(b) means for attaching said support frame to the frame of the motorcycle;

(c) a wheel and a suspension system for connecting said wheel to said support frame;

(d) a substantially horizontal support plate attached to said support frame for supporting a wheelchair in which the driver is seated, said support plate and said support frame forming a protected compartment within which the wheelchair and the driver seated in the wheelchair are disposed while the driver operates the motorcycle, said support plate being disposed sufficiently close to a road surface supporting the motorcycle and the sidecar to permit easy entry of the wheelchair into said compartment by the driver;

(e) steering means connected to said support frame directly in front of the driver for enabling the driver to easily steer the motorcycle while seated in the wheelchair in said compartment;

(f) means for connecting said steering means to the front fork assembly of the motorcycle for translating turning movement applied to said steering means by the driver to produce a corresponding turning of said fork front assembly of the motorcycle; and

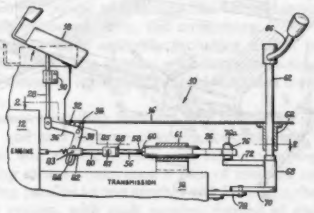
(g) shifting means attached to said sidecar and coupled to said gear shifting lever for enabling the driver to shift gears by means of an arm motion, said shifting means including a hook-shaped end element for engagement by an arm of the driver and a rod-like member attached to said hook-shaped end element, permitting the driver to shift gears of the motorcycle by imparting a longitudinal movement to said rod-like member by engaging said hook-shaped end element with his forearm while grasping said steering means with the hand of that arm.

4,221,277

DEVICE FOR AUTOMATICALLY RETURNING A TRANSMISSION CONTROL TO NEUTRAL

Antonio Mastropieri, 11241 W. Grand Ave., Northlake, Ill. 60164

Filed Sep. 27, 1978, Ser. No. 946,333
Int. Cl.[2] B60K *23/00*
U.S. Cl. 180—273 **7 Claims**



1. An automatic return-to-neutral mechanism for a vehicle transmission and wherein vehicle operator's seat assembly is adapted to move upwardly from an occupied position to an unoccupied position comprising:

a seat-operated linkage mechanism including a portion of which is longitudinally movable;

a transmission shift control lever mounted on the vehicle and shiftable in opposite directions from a neutral position to drive establishing positions;

a first arm means connected to said shift control lever and including cam follower means mounted at the outer end of said arm means;

a second arm means operatively connected to said shift control lever and adapted to be operatively connected to the vehicle transmission control valve;

a cam control mechanism interconnecting said longitudinally movable portion of said linkage mechanism and said first arm means connected to said shift control lever;

said cam control mechanism comprising a cam plate and means on said cam plate defining a pair of cam surfaces angularly disposed with respect to each other, and converging to an apex, said pair of cam surfaces being substantially symmetrically disposed about the longitudinal axis of said longitudinally movable portion of said linkage mechanism;

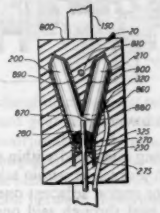
said cam follower means being engageable with either of said pair of cam surfaces.

4,221,278

AUTOMATIC KILL SWITCH

Frankieboy Ponzo, 4154 N. Kilbourn, Chicago, Ill. 60641

Filed Oct. 11, 1978, Ser. No. 950,264
Int. Cl.[3] B60K *28/00*
U.S. Cl. 180—283 **4 Claims**



1. For use with a 2-wheel powered vehicle of the type necessitating a completed electrical circuit means for continued operation, the improvement of a kill switch for the vehicle comprising:

a closed Y-shaped hollow conducting housing having a preferred orientation with a tubular, hollow, conducting stem normally disposed on a vertical axis and (the) two tubular, hollow, conducting arm members, each attached at a first end to a first end of said stem, normally disposed to project angularly upwardly from said stem at a selected acute angle relative to the vertical;

a second end of each of said first arms is permanently sealed;

means for insulating inserted into a second end of said stem member, an electrical contact supported by and electrically insulated from said housing by said means for insulating;

a first low voltage electrical conductor connected to an external end of said contact and a second low voltage electrical conductor connected to said conducting housing;

a predetermined quantity of mercury being inserted into a closed volume comprised of said hollow arm members and said hollow stem member which has been closed at said second end by said means for insulating, whereby said quantity of mercury provides an electrical path between said contact and said housing;

said housing is encapsulated in a strong, rigid, insulating material with selected mounting holes usable to attach said switch to the vehicle;

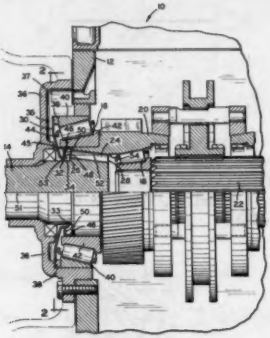
said switch exhibiting a closed circuit condition between said two electrical conductors due to said electrical path when said Y-shaped housing is in said vertical position, said switch being sensitive to a rotation only in a first direction or opposite to said first direction and operable to permit said quantity of mercury to separate from said electrical contact thereby resulting in an open circuit condition between said two electrical conductors.

4,221,279

CENTRIFUGAL LUBRICATION SYSTEM FOR TRANSMISSION POCKET BEARING

Charles R. Jones, Ottawa Lake, Mich., and Donald C. Schultz, Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 11, 1978, Ser. No. 700
Int. Cl.³ F01M *9/06*
U.S. Cl. 184—11 R **10 Claims**



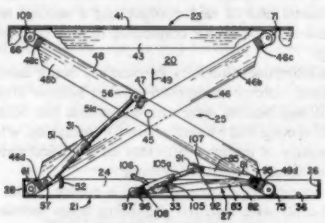
1. A transmission having:
(a) a first shaft,
(b) a pocket bearing contained within said first shaft,
(c) a second shaft journalled within said pocket bearing,
(d) an oil collector region adjacent one of said shafts,
(e) a lubrication port through said one of said shafts, said port having an entrance in communication with said oil collector region and an exit in communication with pocket bearing,
(f) means for collecting lubrication oil, said means located radially outwardly of said collector region whereby oil is thrown centrifugally radially outwardly of said collector region, is held within said means under centrifugal force, and overflows said means into said pocket bearing, and
(g) means for providing lubrication oil to the collector region.

4,221,280

BI-ELEVATIONAL PLATFORM LIFT

Lawrence I. Richards, Elk Grove Village, Ill., assignor to Advance Lifts, Incorporated, St. Charles, Ill.

Filed May 5, 1978, Ser. No. 902,936
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—18 **4 Claims**



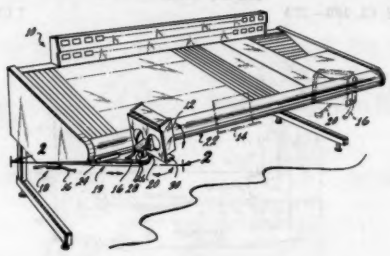
1. Improved bi-elevational platform lift apparatus including in combination base structure means, first support structure means movably supported with reference to the base structure means and being expandable between predetermined vertical lift and descent positions, platform structure means movably supported upon the first support structure means for movement between said predetermined vertical lift and descent positions, and having one end portion thereof pivotally attached to the first support structure means and the other oppositely disposed end portion thereof comprising a free end portion thereof, first means for actuating vertical lift and descent movements of the first support structure means, second support structure means movably supported with respect to the base structure means and the first support structure means for pivotal movement between predetermined angular lift and descent positions, second means for actuating angular lift and descent movements of the second support structure means, the second support structure means including first framework means pivotally connected to the first support structure means and selectively pivotable between a lowered angular descent position and a raised angular lift position, said second actuation means being connected to the first framework means for actuating the angular lift and descent movements of the first framework means, and further including second framework means connected to the first support structure means and movably supported on and with respect to the base structure means, said second framework means providing another connection for the second actuation means and being moved with respect to the base structure means with actuated vertical lift and descent movements of the first support structure means, and said first framework means being actuable to engage and move against the free end portion of said platform structure means for rotating the platform structure means about the pivotally attached one end portion thereof to a predetermined angular lift position.

4,221,281

CARRIER FOR REMOTE CONTROLLER

James L. Melson, 11365 Orcas Ave., Lake View Terrace, Calif. 91342

Filed Nov. 6, 1978, Ser. No. 957,865
Int. Cl.² H02G *11/00*
U.S. Cl. 191—12 R **9 Claims**



1. In combination with a portable electrical controller unit having a cable assembly connected to a remote apparatus to be controlled, a carrier assembly coupled to a work station for enabling one hand transporting and positioning of the controller unit relative to the work station, said carrier assembly comprising:
(a) track means adapted to be fixedly connected to the work station to define the extent of travel of the carrier assembly;
(b) a truck assembly including a track means engaging portion and first locking means for normally locking said truck assembly in locking engagement to prevent motion relative to said track means;
(c) an arm member connected to said truck assembly;
(d) a mounting head connected to said arm member and adapted to receive the controller unit, said mounting head including means enabling relative rotation between the controller unit and said arm member and second locking means for normally making locking engagment to prevent such relative rotation; and
(e) a control lever connected to said mounting head for positioning said mounting head mechanically linked to

said first and second locking means and manually operable for substantially simultaneously operating said first and second locking means out of locking engagment;

whereby one handed operation of said control lever releases said first and second locking means and enables an operator to move the controller unit to a desired location and orientation relative to the work station after which the operator can permit locking engagement of said first and second locking means to prevent subsequent motion of the controller unit.

4,221,282

CONDUCTIVE SHOE ASSEMBLY FOR TROLLEY OR THE LIKE

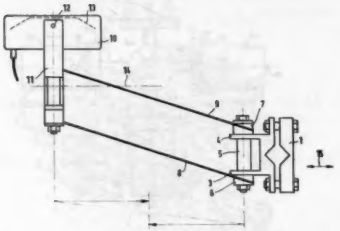
Manfred Wampfler, Weil, Fed. Rep. of Germany, assignor to Wampfler GmbH, Weil am Rhein-Markt, Fed. Rep. of Germany

Filed May 23, 1978, Ser. No. 908,883

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739416

Int. Cl.² B60L *5/12*

U.S. Cl. 191—68 **12 Claims**



9. A unique assembly for maintaining a conductive shoe assembly in electrical contact with a current conducting rail to provide electrical power to a trolley-like vehicle attached to said conductive shoe assembly, and comprising:

said conductive shoe assembly including a skid member adaptable for gliding contact with said conducting rail;

a support assembly releasably attachable to said trolley-like vehicle;

biasing means extending between said conductive shoe assembly and said support assembly for resiliently biasing said skid into gliding contact with said conducting rail;

said biasing means comprising a pair of resilient members extending parallel to one another and forming a rhomboid linkage system, with each member formed of glassfiber-reinforced epoxy resin to insulate said support assembly against the flow of electrical current from said conductive shoe assembly.

4,221,283

DEVICE FOR FACILITATING GEAR CHANGING IN GEAR BOXES

Kjell E. Nordkvist, and Lars H. Skog, both of Södertälje, Sweden, assignors to Saab-Scania Aktiebolag, Södertälje, Sweden

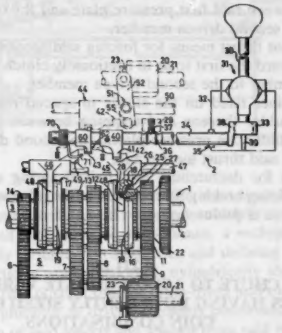
Filed May 3, 1978, Ser. No. 902,745

Claims priority, application Sweden, May 9, 1977, 7705355

Int. Cl.² B60K *41/26*

U.S. Cl. 192—4 C **6 Claims**

1. An arrangement for facilitating engaging a reverse gear not having synchronizing means in a gearbox for motor vehicles, said gearbox containing, in addition to said reverse gear, at least one forward gear provided with a synchronizing means, said gears being manually engageable and disengageable by means of a selector actuating means comprising a gear change lever operating at least one selector actuator rod and also comprising at least one selector actuator coacting with said selector actuator rod, whereby a gear changing movement for engaging a gear comprises a selection step and an engagement step, the selection step involving a movement in a first plane for the selector actuating means, and the engagement step involving a movement in a second plane for the selector actuating means, a gripping means connected to the selector actuating means being arranged to obtain force-transmitting connection with a forward gear selector during a part of the



selector step for the changing movement into reverse gear, and for giving said forward gear selector a shifting movement so that a synchronizer incorporated in the synchronizing means of the forward gear is engaged, before the engagement step for the reverse gear is actuated characterized in that the force-transmitting connection between the gripping means and said forward gear selector is sprung in the shifting direction of said forward gear selector.

4,221,284

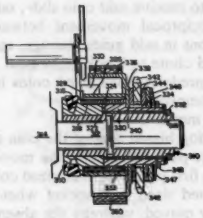
CLUTCH AND BRAKE ASSEMBLY FOR IMPLEMENT DRIVE

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco Inc., Richmond, Ind.

Division of Ser. No. 659,350, Feb. 19, 1976, Pat. No. 4,088,210. This application Apr. 3, 1978, Ser. No. 892,499

Int. Cl.² F16D *41/02*

U.S. Cl. 192—12 BA **1 Claim**



1. A clutch assembly, comprising a driving hub adapted to be mounted on a drive shaft, having a cylindrical clutch face thereon, a shoulder at the end of the clutch face and a reduced portion therebeyond, a sleeve rotatably mounted on said reduced portion and against said shoulder, said sleeve forming a first driven member, having a cylindrical clutch face thereon adjacent to and aligned with the clutch face on the hub, having a shoulder beyond such clutch face and having a mounting portion beyond such shoulder, said hub reduced portion extending beyond said sleeve and having a retainer fixed thereon to retain the sleeve on the hub,

a helical clutch spring engaged about said clutch faces and clutching the hub and sleeve together for forward drive,

a brake rotor having an annular mounting flange mounted on said mounting portion and against the shoulder on said sleeve and non-rotatably engaged with said sleeve, such brake rotor mounting flange forming a fixed first pressure plate on said sleeve,

a second driven member rotatably mounted on the mounting portion of said sleeve, a second pressure plate mounted thereon on the opposite side of said second driven member from said first pressure plate, and a frictional drive face between said first pressure plate and the opposed face of the second driven member,

resilient thrust means for forcing said second pressure plate toward the first so as to frictionally clutch the first driven member to the second driven member,

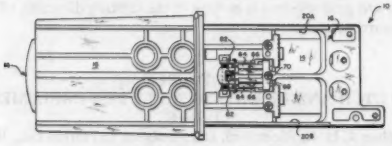
a retainer fixed on the sleeve in spaced relation with the shoulder thereon and trapping between itself and such shoulder the pressure plates, the second driven member, and said thrust means, and,

means for declutching said helical spring clutch and for applying braking force to said brake rotor when the spring clutch is declutched.

4,221,285
COIN CHUTE TO ACCOMMODATE VARIOUS COIN SLIDES HAVING DIFFERENTLY SIZED COINS AND COIN COMBINATIONS

Harry Greenwald, Whitestone, and Christos Lambiris, New York, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Oct. 17, 1978, Ser. No. 952,124
Int. Cl.³ G07F *5/08*
U.S. Cl. 194—1 G **9 Claims**



3. In a coin chute device wherein there is, in combination, a lower assembly portion; an upper assembly portion releasably connected to said lower portion and defining therewith a longitudinal guide track passage; and a coin slide having sockets to carry predetermined sized coins; said guide passage being operable to receive said coin slide; said coin slide being disposed for reciprocal movement between projected and retracted positions in said guide passage; and blocking means mounted on said chute to block movement of the slide in the absence of the predetermined sized coins in the sockets; the improvement comprising:

said blocking means including;

a first sizing dog biased against the coin slide and disposed along a first path defined by the movement of an edge portion of a first predetermined sized coin carried in a first predetermined sized coin socket when the coin slide is reciprocally moved, whereby the absence of a first sized coin or other filler along said first path in the socket will permit said first sizing dog to project into the first predetermined sized coin socket to operate to jam said coin slide; and

a second sizing dog biased against the coin slide and disposed along a second path defined by the movement of an edge portion of a second predetermined sized coin larger than said first coin carried in a second predetermined sized coin socket larger than said first socket and including said first socket within its extent when the coin slide is reciprocally moved, whereby the absence of a second predetermined sized coin or other filler in the socket along said second path, will permit said second sizing dog to project into the second socket to operate to jam said coin slide;

to permit interchangeable use of coin slides with either said first socket or said second socket, in conjunction with said coin chute, without requiring adjustment of said sizing dogs for their operation; said coin slide comprising:

a first knock-out plug; and

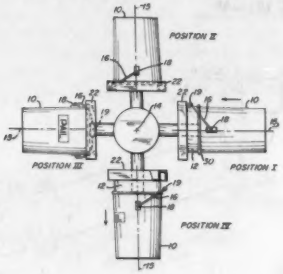
a second knock-out plug, said second plug forming a ring about said first plug;

the removal of said first plug forming said first socket and the removal of said second plug forming said second socket, whereby the coin to be carried in said coin slide can be predetermined.

4,221,286
PAIL BAIL HOLDER

Herbert W. Galer, and Charles M. Menefee, both of Newnan, Ga., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 14, 1978, Ser. No. 896,270
Int. Cl.² B65G *29/00*
U.S. Cl. 198—377 **3 Claims**



1. In an apparatus having (i) means for rotating an open-ended pail about its longitudinal axis and menas for revolving it about an axis orthogonal to said longitudinal axis, (ii) a mandrel for receiving said pail and (iii) means for retaining the pail on said mandrel during rotation; said pail having a bail pivoted at the sides thereof, said pivots lying along a transverse axis of the pail, said bail having a hand grip portion located equidistant from said pivots, the locus of movement of said hand grip describing an arc of a circle,

the improvement for preventing such movement when the pail is rotated, which comprises: a supported bail blocking element having two blocking surfaces which intersect said arc at points lying on a segment thereof, said segment being defined by the intersection of said arc with (a) the plane of the open end of said pail and (b) the cylindrical plane orthogonal to said open end, said blocking element being circumferentially disposed along an annular surface described by the rotation of said arc segment about said longitudinal axis.

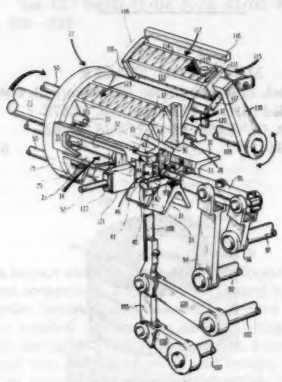
4,221,287
DEVICE FOR FORMING AND TRANSFERRING BATCHES OF PRODUCTS IN AUTOMATIC WRAPPING MACHINES

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Apr. 3, 1979, Ser. No. 26,679
Claims priority, application Italy, Apr. 27, 1978, 3405 A/78
Int. Cl.³ B65G *29/00, 65/00*
U.S. Cl. 198—418 **7 Claims**

1. Device for forming and transferring batches of products in automatic wrapping machines, comprising an intermittently rotatable head rotating about an axis and provided with circumferentially equidistant compartments for holding batches of products, said compartments being arranged longitudinally

parallel to said axis and having front and back extermities that are longitudinally spaced, means to rotate said head, a pusher located, with respect to the said rotatable head, in the region of a product infeed position at which the said compartments pause in succession, the said pusher being movable in the direction of the said compartments with a to-and-fro motion longitudinally thereto, through said front extremity, an infeed device for supplying the products individually to the said pusher, located in the region of the said infeed position, at least one movable wall placed inside each of the said compartments in such a way as to receive flush thereagainst the first of the products inserted therein, a corresponding support member secured to each of said movable walls, slidable longitudinally to the compartment concerned in order to guide the said walls from the said front extremity towards the back extremity of the compartment and then back to the front extremity position, and a device for taking possession of a formed batch of products, placed, with respect to the rotatable head, in the region of an exiting position for the formed batches of products, located downstream of the said infeed position in the direction of rotation of the said rotatable head, wherein essential features of the device include a stationary chamber adjacent the infeed position of said rotatable head in which the products supplied



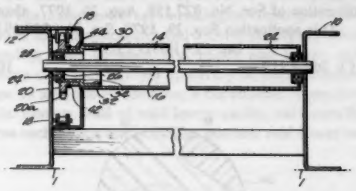
by the said infeed device are held immobile, placed along the path followed by the said pusher and in the proximity of the front extremity of the said compartments; a lamina that lies on a plane substantially perpendicular to the axis of the rotatable head between the said stationary chamber and the said front extremity, and is movable alternately over the said plane between a first position in which the front extremity of the compartment in the rotatable head at a halt in the product infeed position is closed and a second position in which the said front extremity is left open; and a pair of drive devices each having a drive shaft and having intermittent motion in directions opposite to each other, that operate in synchronization with the forward movement of the pusher and are so arranged as to drive an intermittent motion in successive steps, during each pause of the said rotatable head, the wall support member placed inside the compartment located in the region of the said infeed position, so as to displace the wall concerned from the front extremity to the back extremity of the said compartment and thereby form a batch of products between said advancing pusher and said wall, and to drive the wall support member placed inside a compartment upstream of the previously mentioned compartment, so as to displace the wall concerned from the back extremity to the front extremity of the said compartment, respectively.

4,221,288

CONVEYOR ROLLER

George Rae, Port Hope, Canada, assignor to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 26, 1978, Ser. No. 973,319
Int. Cl.[2] B65G *13/06*
U.S. Cl. 198—781 7 Claims



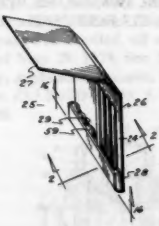
1. An accumulating roller conveyor having a support, a pair of side frames mounted on said support, a multiplicity of axles fixedly mounted between said side frames, a multiplicity of rollers rotatably mounted on said axles and defining surfaces over which articles are transported, cylindrically shaped inserts having a first portion thereof press-fitted into one end of each roller, a plurality of driven elements positioned about a second portion of said inserts and spaced from said one roller end, the inner diameter of said driven elements being slightly greater than the outer diameter of said second portion, a drive means engaging and driving said driven means, and means engaging selected driven elements adjacent the positions of engagement by said driving means to produce reactionary forces between the surfaces of the selected driven elements and inserts, whereby as each selected driven element rotates, the resultant forces between the surfaces of the selected driven elements and corresponding inserts impose a driving force on the rollers which will continue to rotate until a counter-vailing torque acts upon the roller which is equal to or greater than the torque imposed by the driving force.

4,221,289

MATCH PACKAGING

Lawrence E. Lodrick, 2436 Harrison Ave. N., Rochester, Mich. 48063

Filed Mar. 5, 1979, Ser. No. 17,081
Int. Cl.[2] A24F *27/20, 27/26*
U.S. Cl. 206—98 7 Claims



1. A match package comprising a cardboard cover into which is fastened a separator which defines an isolation pocket for each individual match therein, wherein isolated striker material sections are stragically positioned on a strip containing openings, said strip being attached at one edge of the matchbook then being threaded through slots in the match separator, then being bent and brought back through said slots essentially in contact with itself said openings in the strip needing to be lined up with a particular striker section and the apropriate match before match removal will achieve ignition, said appropriate match being determined from a sequence

chart on the package cover in connection with proper positioning of the strip in relation to the edge of the package.

4,221,290

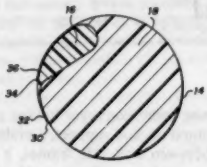
DUAL COMPARTMENTED CONTAINER

Bernard J. Bast, Bethlehem, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Continuation of Ser. No. 827,155, Aug. 24, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,192

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **10 Claims**



1. In a compartmented container made of pliable film material with a first and second surface, said container having a first compartment formed by looping the film material in a first direction and attaching the first surface of the film material adjacent one edge to the first surface of the film material intermediate of the edges of the film material to form a first seam substantially parallel to the longitudinal axis of said package, a second compartment formed with said film material by looping the film material in a second direction opposite said first direction and attaching the second surface adjacent the second edge of the film material to the first compartment to form a second seam and having reactive components within said first and second compartments, said compartments being closed at opposite ends, the improvement comprising:

forming said second seam by attachment of the second surface of the film material to said first compartment, said second seam being adjacent to but not overlying said first seam such that said seams are formed by joining only two layers of film material.

4,221,291

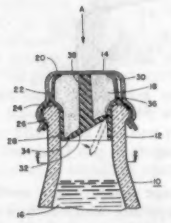
CONTAINER HAVING SEPARATE STORAGE FACILITIES FOR TWO MATERIALS

Guilbert M. Hunt, Brecksville, Ohio, assignor to General Foods Corporation, White Plains, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,261

Int. Cl.² B65D *25/08*

U.S. Cl. 206—222 **12 Claims**



1. A container arrangement for separately storing at least first and second materials in a container and providing for the selective admixing of the first and second materials in the container, comprising:

a. a container for containing said first material, said container including a dispensing orifice defining an access aperture to the contents of the container; and

b. closure means, comprising inner and outer members, for sealing said access aperture, including a flexible upper wall in said outer member, a compartment associated with said closure means for containing said second material, said inner member forming the side walls of said compartment and defining a first substantial portion of the compartment extending into the container through said dispensing orifice and further defining a substantial portion of the compartment projecting above said dispensing orifice, said inner member also forming said compartment having at least a portion thereof extending into said container, a releasable bottom wall on said compartment proximate the innermost end of said compartment in said container, a hinge means connecting said releasable bottom wall to said compartment, an actuating rod extending through said compartment from said releasable bottom wall to said upper wall sealing said access aperture, said flexible upper wall adapted to be depressed into said container responsive to external pressure being applied thereto whereby said actuating rod will be displaced in the direction of the releasable bottom wall of said compartment to cause said releasable bottom wall to at least partly disengage from said compartment so as to open said compartment and release the second material from said compartment into the first material in said container.

4,221,292

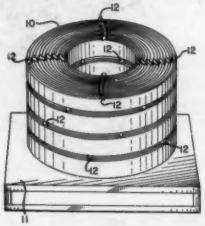
METAL COIL SPACER

Thomas P. Koebel, 1248 Baythorne, Flossmoor, Ill. 60422

Filed Mar. 8, 1979, Ser. No. 18,575

Int. Cl.³ B65D *19/00, 19/38, 85/62*

U.S. Cl. 206—386 **6 Claims**



1. A metal spacer comprising a metal strip designed to stand on edge and act as a load bearing support disposed edgewise between stacked loads, said strip being formed to provide a plurality of columnar structures in adjoining relation from end to end of the strip, said columnar structures being disposed in parallel relation and extending vertically in the load supporting position of the metal strip and from edge to edge of the strip.

4,221,293

CONTAINER FOR FACIAL TISSUES

Alfred A. Anthony, Nokomis, Fla., assignor to Design Accessories Inc., Westport, Conn.

Filed Apr. 9, 1979, Ser. No. 28,182

Int. Cl.³ B65D *83/00*

U.S. Cl. 206—494 **12 Claims**

1. A container for dispensing facial tissue or the like, said container being formed of a plurality of rounded sections including a lower rounded section having an upper rim portion and an upper rounded section having a lower rim portion interfitting detachably with said upper rim portion, said lower section being weighted at a bottom portion thereof and said upper section having an opening formed in the top portion

thereof, whereby said opening will rotate towards the direction of travel of a tissue removed from said container and when

the force effecting said removal is itself removed will with said container return to its initial position.

4,221,294

IMPACT ABSORBING BOX

Norman E. A. Burgess, Westmount, Canada, assignor to Domtar Inc, Montreal, Canada

Filed May 21, 1979, Ser. No. 40,654
Int. Cl.³ B65D *75/04, 5/18, 45/00, 81/16*
U.S. Cl. 206—521 **5 Claims**

1. An impact absorbing box structure formed of corrugated boxboard comprising, a bottom wall formed by a substantially rectangular bottom panel, a weakened area formed in said panel by crushed corrugations in said corrugated board substantially throughout said weakened area, a rim separating said weakened area and the edges of said bottom panel, fold lines extending substantially diagonally from each corner of said panel across said rim to adjacent edges of said weakened area, said rim being of substantially uniform width of between ½ and 3", said fold lines, said width and the amount of said weakened area cooperating to hold said box in shape under normal conditions, yet sufficiently weakening said bottom panel to facilitate buckling thereof and permitting said box to distort when subject to significant impact thereby to absorb said impact without bursting of said box.

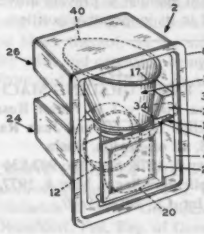
4,221,295

MID-STREAM URINE COLLECTION DEVICE AND PACKAGE THEREFOR

Steve Tuchband, 91 Bunker Hill Dr., Trumbull, Conn. 06611, and John Uhoch, Jr., 313 Beach Ave., Warwick, R.I. 02889

Filed Jan. 12, 1979, Ser. No. 3,098
Int. Cl.³ B65D *69/00, 71/00*
U.S. Cl. 206—569 **1 Claim**

1. A urine sample collection system comprising:
(a) a supply of cleansing towelettes;
(b) a funnel-container assembly including a funnel and a container and a tab member removably connecting said funnel and said container;
(c) a cap member adapted to be secured to the container after collection of the urine sample;
(d) a label member adapted to contain identifying information adapted to be secured to the container; and
(e) packaging means including a base member and a cover for packing said components of paragraphs (a)–(d) in a sterile condition and so that said components can be aseptically removed in their order of use, said packaging means includes a base member hollowed out to receive the urine collection components, the open side of said base member being closed by a side which is removable when the system is ready for use, said removable side maintaining the urine collection components in sterile condition while the components are in packaged condition, said base member includes an upper and a lower cavity; an inwardly extending wall between said upper and lower cavities forming a divider tapered upwardly to accommodate the shape of said funnel member; a curvilinear recess formed in the bottom wall of said lower cavity, said curvilinear recess including a semi-circular portion; said lower cavity



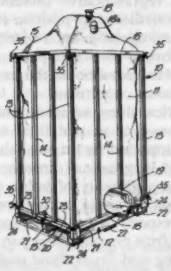
having a rear wall which is substantially flat, said rear wall including inwardly extending curved portions spaced apart a distance equal to the diameter of said cup;
(f) at least one surface of said removable side contains use instructions;
(g) said label being placed in contact with said flat surface of said rear wall;
(h) said cap member being placed between said inwardly extending curved portions of said rear wall;
(i) said funnel-container assembly being positioned with the container in engagement with said curvilinear recess in the bottom wall of said lower cavity and said funnel extending into said upper cavity; and
(j) a supply of towelettes placed within said base.

4,221,296

SHIPPING ASSEMBLY

Don R. Fell, Stoney Creek, and Seiji Takeuchi, Burlington, both of Canada, assignors to Don Fell Limited; Gordon Fell Limited and Lawrence Fell Limited, all of Hamilton, Canada

Filed May 29, 1979, Ser. No. 42,891
Claims priority, application Canada, Mar. 20, 1979, 323855
Int. Cl.³ B65D *19/16, 5/74, 90/04*
U.S. Cl. 206—600 **5 Claims**



1. A shipping assembly for a dry bulk commodity comprising

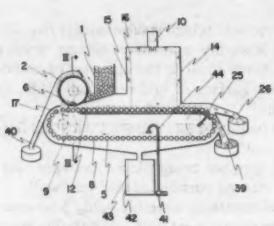
(a) a flexible bag having openings for receiving and discharging such commodity;
(b) a foldable, rigid frame having a periphery for containing and supporting said bag;
(c) a pallet for supporting said frame and the bottom of the bag; and
(d) releasable means for interconnecting said pallet and frame, said means including at least one downward projection on said frame for engaging the pallet to prevent horizontal relative movement therebetween and at least one detent member mounted on the frame to move between an inoperative position and an engaged position in which it limits vertical relative movement between the frame and the pallet, said detent member being mounted on a portion of the frame inward of the periphery thereof whereby said bag when charged with said commodity overlies said detent member to prevent movement thereof from its engaged to its inoperative position.

4,221,297

ELECTRONIC FRUIT GRADING MACHINES

José M. Aranda López, No 5 y 7 10 Pintor Rosales; Jose R. Conde Hinojosa, Felipe II 30–60, and Juan Ramos Martos, Juan R. Jimenez 25, all of, Sevilla, Spain

Filed May 2, 1978, Ser. No. 902,834
Claims priority, application Spain, May 4, 1977, 458.478
Int. Cl.[2] B07C 5/00
U.S. Cl. 209—576 **8 Claims**



1. In an electronic fruit grading machine of the type including an endless conveyor movable in a longitudinal direction from an upstream fruit supply position to a downstream fruit discharge position, said conveyor being formed of positioning bars extending transversely of said longitudinal direction, said bars including means for receiving and supporting fruit in longitudinally and transversely extending rows, hopper means at said fruit supply position for a supply of fruit to be graded, means for transferring fruit from said hopper means to said receiving and supporting means, whereby fruit is moved by said conveyor toward said fruit discharge position, electronic means positioned adjacent said conveyor at a location between said fruit supply and fruit discharge positions for scanning said fruit to detect undesired surface conditions thereof and for generating signals representative thereof, and reject means positioned at said fruit discharge position and connected to said electronic means and operable upon receipt of said signals for rejecting from a normal discharge path any said fruit having said undesired surface conditions, the improvement wherein said transferring means comprises:

a hollow cylindrical drum adjacent said hopper means and above said conveyor at said fruit supply position, said drum being supported by an axial shaft extending transversely of said longitudinal direction, said drum having formed therein a plurality of holes, said holes being arranged about said drum in circumferential and transverse rows aligned respectively with said longitudinal and transverse rows of fruit on said conveyor;

means for rotating said drum about said axial shaft;

suction means connected to said drum for creating in the interior of said drum a vacuum capable of retaining fruit from said hopper means against said holes, whereby upon rotation of said drum the thus retained fruit is carried by said drum toward said conveyor;

selection means, positioned above said drum and having recesses spaced from the outer surface of said drum at areas aligned with said circumferential rows of holes and projections adjacent said outer surface of said drum at areas between adjacent said circumferential rows of holes, for preventing fruit which is positioned between transversely adjacent holes from being retained by said vacuum;

wedge means located on said outer surface of said drum, at positions between circumferentially adjacent said holes, for preventing fruit which is positioned between said circumferentially adjacent holes from being retained by said vacuum; and

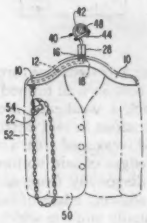
fruit expelling means, supported by said axial shaft of said drum eccentrically within the interior of said drum, for expelling fruit retained on said drum when said fruit, due to rotation of said drum, is moved to a position above said conveyor, and for thereby allowing said fruit to be discharged into said receiving and supporting means.

4,221,298

SECURITY-TYPE GARMENT HANGER

Kenneth Wright, 20800 Homestead Rd., Cupertino, Calif. 95014, and Dennis J. Kenny, 1751 Terrace Dr., Belmont, Calif. 94002

Filed Nov. 18, 1977, Ser. No. 852,994
Int. Cl.[2] A47F 7/19
U.S. Cl. 211—4 **2 Claims**

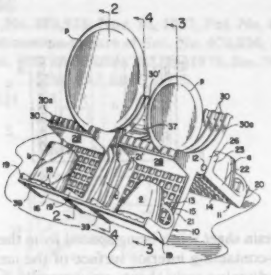


1. A security-type garment hanger comprising: a hanger body having a pair of inclined, shoulder supporting members joined together at the central part of the body, there being a hole through the body at the junction of said members; a bar extending along one of the members and having an upper end provided with an externally threaded stud thereon, the stud extending through the hole and projecting upwardly therefrom, the bar having a lower end near the outer end of said one member; a pair of nuts coupled with the stud at locations above and below the hole for securing the stud and thereby the bar to the hanger body; means attached to said upper end of the stud for fixedly attaching the hanger body to a rack, said attaching means including a cap threadably mounted on the upper end of the stud and an open loop hanger member having a lower end portion threadably mounted on the upper end of the cap; a chain; means fixedly connecting one end of the chain to the lower end of the bar, said chain having a length sufficient to permit it to extend downwardly from the bar, through a sleeve of a garment supported by said members, beneath the lower margin of the garment, and upwardly through the interior of the garment and generally parallel to the sleeve to a location near said one end of the chain when the hanger body is attached to a rack; and a releasable lock for connecting the opposite end of the chain to the chain itself at said location.

4,221,299
FOLDING DISH DRAINER

William D. Taylor, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Jan. 11, 1979, Ser. No. 2,617
Int. Cl.[2] A47F 5/10
U.S. Cl. 211—41 10 Claims

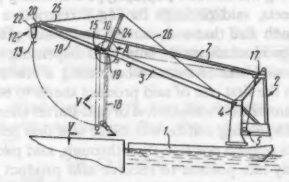


1. A folding dish drainer of molded plastic material comprising two wings hinged together and having substantially flat inner walls adapted for abutting each other in folded position and for swinging apart laterally into unfolded position, one of said wings having an extended upper portion comprising a longitudinal series of spaced-apart laterally extending arcuate ribs with abutments therebetween for receiving and supporting the rims of plates in upright edgewise positions, said flat inner walls having bottom angular support flanges, and walls forming a separate channel for containing cutlery in said one wing extending upwardly from the bottom flange thereof and into said extended upper portion.

4,221,300
LOAD-LIFTING CRANE

Gennady I. Rudak, prospekt Oktyabrskoi Revoljutsii, 35, kv. 67; Iosif M. Berkhin, prospekt Gagarina, 17, kv. 35; Gennady V. Kravchenko, ulitsa Repina, 30, kv. 95; Kamilla S. Dmitrieva, prospekt Pobedy, 36, kv. 95; Vladimir I. Bocharov, prospekt Oktyabrskoi Revoljutsii, 33, kv. 95; Julian V. Kuzmenko, prospekt Ostryakova, 21, kv. 18; Alexandr S. Kharkovsky, ulitsa Bljukhera, 13, kv. 29; Igor V. Kononov, ulitsa Repina, 8, kv. 61; Igor V. Felenkovsky, ulitsa Repina, 12, kv. 12; Nikolai D. Velikoselsky, prospekt Gagarina, 15, kv. 29, and Arnold A. Gudze, ulitsa Repina, 13, kv. 2, all of Sevastopol, U.S.S.R.

Filed Aug. 16, 1978, Ser. No. 934,262
Int. Cl.[2] B66C 23/68
U.S. Cl. 212—192 3 Claims

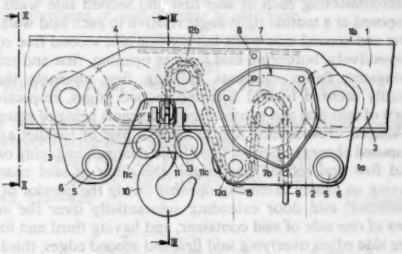


1. A load-lifting crane comprising; a framework; a jib mounted on said framework; an extension connected to said jib and adapted to increase the outreach and the load-lifting height thereof; a rope winch mounted on said framework; a rope having one end thereof secured to said rope winch; a block mounted on the free end of said jib and adapted to have a run of said rope, coming from said winch, running over it; a double tackle arrangement formed by said rope; a load-engaging device suspended from said double tackle arrangement; an additional block adapted to have a run of said rope, coming from said double tackle arrangement, running over it, said additional block being mounted on the free end of said jib and offset relative to said first-mentioned block laterally of said jib by an extent at least equal to the diameter of said rope, for the runs of said ropes not to engage each other at load-handling operations; the other end of said rope secured to said framework; a block mounted on the free end of said extension and adapted to have the run of said rope, coming from said winch, running over it; an additional block adapted to have the run of said rope, coming from said double tackle arrangement, running over it, said last-mentioned additional block being mounted on the free end of said extension and offset relative to said block of said extension laterally of said jib by an extent at least equal to the diameter of said rope; said extension being connected with said jib for rotation about a horizontal axle mounted on said jib adjacent to said first-mentioned block thereof and to said additional block thereof, on the side facing said framework, whereby with said extension being rotated, said rope is guided over from said blocks of said jib onto said blocks of said extension.

4,221,301
CRANE TROLLEY WITH A HOIST

Reinhard Walerowski, Dusseldorf, Fed. Rep. of Germany, assignor to Heinrich de Fries Gesellschaft mit beschränkter Haftung, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,052
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728740
Int. Cl.[2] B66C 19/00
U.S. Cl. 212—134 4 Claims



1. A crane trolley which is movable by rollers on the lower flange of a runway girder, comprising

a crane trolley having two side plates,

a hoist being inserted in one of said two sides plates,

said hoist including a load chain and a load chain wheel means for driving said load chain,

guide rollers,

said load chain being guided over said guide rollers and fastened with one end thereof to the crane trolley,

a lower block carried by said load chain,

a load hook being carried by said lower block,

said hoist is arranged off-set with respect to said lower block in a longitudinal direction of the crane trolley,

said guide rollers including two guide roller means for guiding said load chain thereon and therebetween in an S-shape between said load chain wheel means of said hoist and a pulling portion of the load chain of said lower block,

one of said two guide roller means is disposed higher than the other of said two guide roller means and is mounted on said one side plate,

means for attaching said one end of said load chain to the other of said side plates of the crane trolley,

two guide chain wheel means for guiding said load chain between said attaching means and said one guide roller means,

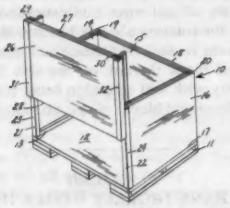
said lower block includes a central yoke,
said two guide chain wheel means are arranged on said lower block, said two chain wheel means are arranged laterally above said central yoke of said lower block.

4,221,302

DOOR CONSTRUCTION FOR FOLDING CONTAINER

Julius B. Kupersmit, New York, N.Y., assignor to Container Systems Corp., Springfield Gardens, N.Y.

Filed Aug. 12, 1977, Ser. No. 824,160
Int. Cl.³ B65D *6/00, 88/00*
U.S. Cl. 220—4 F **1 Claim**



1. In a collapsable shipping container construction having a relatively rigid pallet, a plurality of interconnected side walls secured to said pallet, there being an opening for loading and unloading in the plane of one of said side walls, and a slidably mounted door selectively closing said opening, the improvement comprising: said container including first and second oppositely disposed side walls, and a third wall permanently interconnecting each of said first and second side walls, and disposed at a mutual right angle relative to each said wall; said first and second side walls having first and second free edges, respectively, bordering said loading opening; first and second elongated flange elements defining first channels therein fixedly secured to said first and second edges, respectively; each of said first and second flange elements being of generally E-shaped cross-section and defining a pair of parallel axially disposed channels therein, one of said channels engaging one of said first and second free edges, the other of said channels having an axially extending opening facing the interior of said container; said door extending substantially over the entire area of one side of said container, and having third and fourth free side edges overlying said first and second edges; third and fourth flange elements fixedly secured to said third and fourth edges, respectively, of said door, said third and fourth flange elements each defining an elongated U-shaped flange slidably engaged within one of the other of said channels in said first and second flange elements, whereby outward movement of said door relative to said container is prevented; said first and second flange elements each having a planar outwardly disposed surface slidably engaging a corresponding inwardly disposed surface on one of said third and fourth flange elements for preventing inward movement of said door relative to said container, and providing a substantial bearing surface for guiding sliding movement.

4,221,303

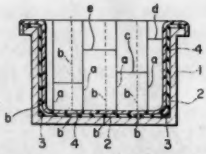
ANTICORROSIVE LIQUID TANK WITH OFFSET LINING JOINTS

Yukio Yoshimura, Shiga, and Masahisa Sonku, Hikone, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 3, 1978, Ser. No. 883,426
Claims priority, application Japan, Mar. 3, 1977, 52/23407
Int. Cl.² B65D *25/14*
U.S. Cl. 220—461 **5 Claims**

1. In an anticorrosive tank for caustic liquids or the like including a tank body, a cushioning layer comprising adjoining sheets of shock absorptive material adhesively secured to the internal surface of the tank body, and a lining layer comprising adjoining sheets of corrosion resistant synthetic resin material overlying and adhesively secured to the shock absorptive sheets, said corrosion resistant synthetic material forming a liquid-containing interior tank surface the improvements characterized by:

(a) the joints between adjacent resin sheets being offset from the joints between adjacent shock absorptive sheets, and



(b) the resin sheet joints being spaced from the corners of the liquid-contacting interior surface of the tank, and

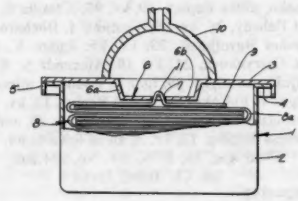
(c) the adjoining resin sheets are generally rectangular and have long and short sides, and the horizontal joint lines between the short sides of adjoining resin sheets are staggered with respect to the horizontal joint lines between the short sides of resin sheets adjacent each other along the long sides.

4,221,304

STARTER MEANS AND METHOD FOR A POP-UP TYPE DISPENSING PACKAGING FOR INTERLEAVED PRE-MOISTENED SHEETS

Kent R. Wahl, Cincinnati, Ohio, and A. Robert Harm, Sunman, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 780,697, Mar. 24, 1977, abandoned.
This application Oct. 16, 1978, Ser. No. 951,328
Int. Cl.² A47K *10/20*
U.S. Cl. 221—1 **26 Claims**



1. A starting means for a pop-up type dispensing package for product sheets, said package having a restrictive dispensing orifice of such size that a consumer could not grasp the first one of said product sheets through said dispensing orifice with his fingers, said starter means comprising a starter sheet arranged with the first one of said product sheets to be dispensed in such a manner that withdrawal of said starter sheet from said restrictive dispensing orifice will cause said first product sheet to assume its pop-up position therethrough, said package comprising a tray-like portion to receive said product sheets and said starter sheet and a cover for said tray-like portion to close said tray-like portion and to overlie said starter sheet, said restrictive dispensing orifice being located in said cover, a portion of said starter sheet extending through said restrictive dispensing orifice, said last mentioned portion of said starter sheet being of sufficient length as to be conveniently grasped by the fingers of the consumer, said starter sheet being sufficiently less porous than said product sheets and of such strength and flexibility that said portion thereof may be drawn

through said restrictive dispensing orifice by vacuum without withdrawing a portion of said first product sheet therethrough.

4,221,305

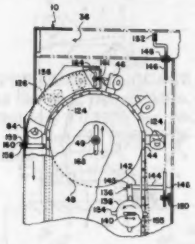
SEED PLANTING MACHINES

Carl D. Freeman, Idaho Falls, and Melvin G. Grover, Rigby, both of Id., assignors to Logan Farm Equipment Co., Inc., Idaho Falls, Id.

Division of Ser. No. 851,921, Nov. 16, 1977, Pat. No. 4,193,357, which is a continuation-in-part of Ser. No. 676,836, Apr. 10, 1976, abandoned. This application Jul. 11, 1979, Ser. No. 56,464

Int. Cl.³ A01C *9/02*

U.S. Cl. 221—131 **3 Claims**



1. A machine for setting seeds of the type in which the seeds, fed from a receptacle to a hopper connected to the receptacle, are conveyed in cups traveling on an elevator on an endless conveyor thereof which is supported on a driven and a return sprocket of the elevator through the hopper to a furrow beneath the machine for planting therein, the cups arranged in at least two rows on the endless conveyor, each cup in one row secured on the conveyor in staggered relation with respect to each cup in an adjacent row and traveling in the rows so that the cups in one row maintain a substantially constant relationship with the cups in an adjacent row, the cups being conveyed upwardly through the hopper for loading with seed, around the return sprocket to reverse direction and to invert the cups, thereafter descending to the bottom of the machine comprising, in combination, at least one curved tube mounted on the machine in cup receiving relation adjacent the return sprocket extending from a point where the cups begin to reverse direction to a point where the cups have completely inverted and descend on the conveyor to the bottom of the machine, the tube enclosing the cups and having a shape substantially conforming to the pattern formed by the cups as they round the return sprocket and reverse direction, and means for adjustably positioning the tube relative to the cups to change the clearance between the cups and the inside walls of the tube.

4,221,306

VIBRATING FEEDER

Klaus Althoff, Remscheid-Lüttringhausen, Fed. Rep. of Germany, assignor to "RHEWUM" Rheinische Werkzeug- und Maschinenfabrik GmbH, Remscheid-Lüttringhausen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,103

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745432

Int. Cl.³ B65G *27/20*

U.S. Cl. 222—200 **3 Claims**

1. In a vibrating feeder for receiving bulk material and discharging it in even distribution, including a housing of substantially rectangular outline having a length and a width; a bulk material inlet means arranged at an upper portion of the housing at one end thereof; a base accommodated in the housing and extending substantially along the entire length thereof; the base sloping downwardly from the inlet means and decreasing in width with increasing distance from the inlet means whereby the base has an upper, wide end and a lower, narrow end; the base further having a center of gravity, a top side, an underside and at least one longitudinal edge extending at an inclination to the length of the housing; said longitudinal edge forming a bulk material discharge means; support means for mounting the base in the housing; and a vibrator operatively coupled with the base for imparting vibrations to the base whereby bulk material introduced through the inlet means to said top side of the base is assisted in its distribution over the surface of the base and discharge over said longitudinal edge; the improvement wherein said support means consist exclusively of first elastic support means directly connecting said wide end of said base with said housing and second elastic

support means directly connecting said narrow end of said base with said housing; said second elastic support means having length adjusting means situated externally of the housing for being accessible to arbitrarily vary the inclination of said base; the improvement further comprising connecting means for coupling said vibrator to said base, said connecting means comprising a plunger projecting through said housing and having a first end affixed to said underside of said base at least approximately at said center of gravity; said plunger further having a a second end carrying said vibrator externally of said housing; said plunger constituting the sole component transmitting vibrations of said vibrator to said base.

4,221,307

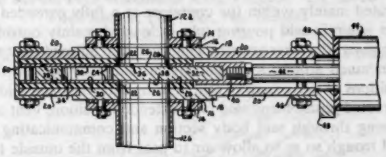
METHOD AND APPARATUS FOR MATERIAL HANDLING

Loren N. Peterson, Salina, Kans., assignor to Salina Vortex Conveyor Corporation, Salina, Kans.

Filed Nov. 22, 1978, Ser. No. 962,915

Int. Cl.² G01F *11/28*; F16K *3/00*

U.S. Cl. 222—428 **12 Claims**



1. A device for use in controlling material flow between first and second areas, said device comprising:

first and second guide plates each having an opening communicating with an adjacent one of said areas and a planar surface extending on either side of said opening;

gate means disposed between said plates, said gate means having an opening and a planar surface extending on at least one side of said opening,

said gate means being movable from an open position wherein all of said openings are aligned to a closed position wherein the planar surface of said gate means moves past said openings in said guide plates to close said guide plate openings;

resilient compressible sheet means substantially coextensive with and disposed in backing relationship to each of said guide plates,

each of said sheet means having an opening coextensive with the opening in a corresponding guide plate; and

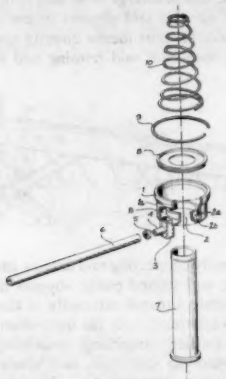
means for effecting movement of said gate means.

4,221,308

POURING SPOUT

Donald T. Goodall, 30 Beach St., Blakehurst, Sydney, Australia (2221)

Filed Nov. 1, 1977, Ser. No. 847,421
Claims priority, application Australia, Nov. 1, 1976, PC 7943
Int. Cl.[3] F67D 3/00
U.S. Cl. 222—470 5 Claims



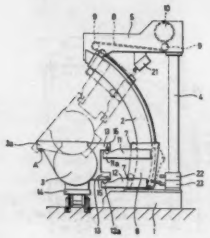
1. A pouring spout for pouring liquid from an enclosed container having a discharge opening therein, said spout comprising: a body section including a bottom wall, a sidewall and an open top, said body section sealingly locatable within said discharge opening and having an aperture of lesser diameter than said body section extending through said bottom wall for providing an opening into the container when said body section is sealingly located within said discharge opening; an upstanding annular flange integral with said body and surrounding said aperture and defining with the sidewall of the body section a trough, a pouring tube passing through said aperture in said body section so that, when said body section is sealingly located within said discharge opening, said pouring tube is movable through said aperture in said body section from a fully retracted position wherein said pouring tube is located mainly within the container to a fully extended position wherein said pouring tube is located mainly outside the container, the arrangement being such that a liquid tight seal is maintained around said aperture in said body section for all positions of movement of said pouring tube between said fully retracted position and said fully extended position; vent means passing through said body section and communicating with said trough so as to allow air to pass from the outside to the inside of the container when said body section is sealingly located within said discharge opening; said vent means comprising an opening in the bottom of said trough, a hollow vent member communicating with said opening and depending from the bottom of said trough, an outlet tube connected to said hollow vent member, a vent tube fitted over said outlet tube, said vent member, outlet tube and said vent tube being disposed wholly within said container when said pouring spout is assembled therewith, said trough receiving any liquid trapped in said vent means which would normally spill when said container is tilted for a pouring operation, closure means for forming a liquid tight seal across said discharge opening when said pouring tube is in said fully retracted position and the container is not required for a pouring operation so that, in operation, said closure means is removed from said discharge opening and said pouring tube is moved from said fully retracted position to said fully extended position whereupon the container may be tilted to allow liquid to pass therefrom through said pouring tube under the pressure of air entering the container through said vent means, said pouring spout being readily removable from one container and used for connection to another container.

4,221,309

LADLE TILTING APPARATUS

Fritz Mezger, Muntelier, Switzerland, assignor to Maschinenfabrik & Eisengiesserei Ed. Mezger AG, Kallnach, Switzerland

Filed Sep. 11, 1978, Ser. No. 941,234
Claims priority, application Switzerland, Sep. 12, 1977, 11130/77
Int. Cl.[2] B22D 41/04
U.S. Cl. 222—604 3 Claims



1. In casting apparatus of the type having a plurality of ladles each having a lip and being tiltable during casting about a fixed geometrical axis situated at said lip, and at least two dollies for transporting said ladles, the improvement which comprises the provision of a ladle quick-change device including:

hooking members disposed on each of said ladles at a location thereof remote from said lip,

a stationary guide support curving about said geometrical axis, and

a carriage designed for motor-driven travel up and down said guide support and having at least one supporting arm including a hook-shaped end portion adapted to cooperate with said hooking members for holding said ladles fast during said travel of said carriage and during casting and for releasing said ladles when said carriage reaches the lowermost position of said travel,

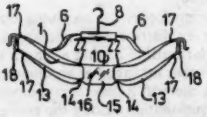
one of said dollies always being so disposed with respect to said carriage as to present one of said ladles filled with molten metal thereto, to receive said one of said ladles in emptied condition after said travel up and down of said carriage, and to be moved laterally away from said guide support in order to make way for the simultaneous presentation of another of said ladles filled with molten metal transported on another one of said dollies.

4,221,310

GARMENT HANGER

Martin G. Hazenveld, P.O. Box 90, 5750 Ab Deurne, Netherlands

Filed Jan. 17, 1979, Ser. No. 4,077
Claims priority, application Netherlands, Jan. 23, 1978, 7800793
Int. Cl.[2] A47J 51/10
U.S. Cl. 223—94 10 Claims



1. A garment hanger comprising a base element including

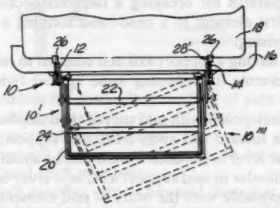
two upwardly inclined tensioning arms having adjacent ends and remote ends, first means for hingedly connecting together said adjacent ends, a top element including two downwardly inclined connecting arms of substantially half the length of said tensioning arms, said connecting arms having adjacent ends and remote ends, second means for hingedly connecting together said connecting arms adjacent ends, third means for hingedly connecting one of said connecting arm remote ends to one of said tensioning arms substantially medially of the adjacent and remote ends of said one tensioning arm, fourth means for hingedly connecting another of said connecting arm remote ends to another of said tensioning arms substantially medially of the adjacent and remote ends of said another tensioning arm, means for urging said top element and said base element relatively toward each other, and means connected directly to only said top element contiguous said second hinge connecting means for suspending said hanger from a suitable support.

4,221,311

BUMPER GUARD LUGGAGE CARRIER

Silas Penn, 5316 Sheridan, Detroit, Mich. 48213

Filed May 17, 1979, Ser. No. 39,809
Int. Cl.² B60R *9/06*
U.S. Cl. 224—42.08 **10 Claims**



1. A luggage carrier for a motor vehicle having a rear bumper comprising a first and a second upright laterally spaced bumper guard bearing against said bumper, each bumper guard comprising an elongated body, an arcuate recess in the forward edge of said elongated body adapted for cooperative registry with said bumper, means securing said elongated body to said bumper, a rack frame having side members and a series of parallel spaced crossbars, one end of said frame bearing against and interposed between said guards, said frame being pivotally mounted to said guards, pivotal linkage means supporting said frame in a horizontal use position and permitting upward tilting of the frame to a vertical non-use storage position, and wherein said rack is removably mounted to said first bumper guard and hingedly mounted to said second bumper guard such that said rack is hingeable on an axis parallel to said second bumper guard from a horizontal use position to a horizontal curb-loading position.

4,221,312

TIRE MOUNTING BRACKET FOR VEHICLES

Marvin G. Wertjes, 2118 Valley Park Dr., Cedar Falls, Iowa 50613

Filed Jul. 3, 1978, Ser. No. 921,217
Int. Cl.² B62D *43/04*
U.S. Cl. 224—42.21 **5 Claims**

1. A structure for supporting a spare tire on the underside of a vehicle, comprising,

an elongated tire supporting frame having longitudinally spaced forward and rearward ends and laterally spaced opposite sides,

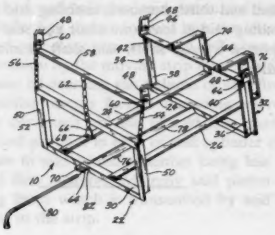
upstanding side members having upper and lower end portions, the lower end portions being connected to opposite sides of said frame adjacent the forward end thereof,

means for pivotally connecting said upper end portions to the underside of a vehicle for up and down pivotal movement of the rearward end of the frame between a generally horizontal transport position and a downwardly and rearwardly inclined service position,

a rear mounting bracket adapted for securement to the underside of a vehicle above the rearward end of said frame,

a collapsible tension member connected to said rear mounting bracket and to the rearward end of said frame,

said tension member being collapsed in non-load bearing relation when the frame is in the transport position and extended in load bearing relation when the frame is in the service position to limit downward pivotal movement of the rearward end of the frame to the service position,



means for releasably securing said frame in the transport position including a second tension member connected at one end to said rear mounting bracket and detachably connected at the other end to the rearward end of the frame in the transport position,

said second tension member being laterally positioned relative to the frame to limit rearward movement of a spare tire supported on said frame in the transport position.

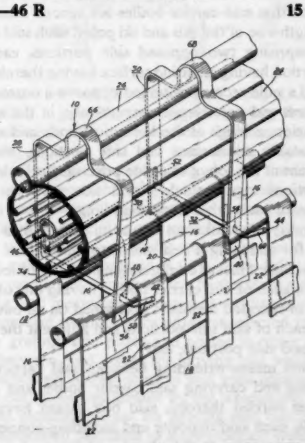
a lifting bracket connected to the frame forwardly of the rearward end of the frame, said bracket adapted to receive one end of an elongated lever which may be extended rearwardly beyond and lifted against said rear cross member to provide leverage for lifting the frame from the service position to the transport position.

4,221,313

CARRYING APPARATUS

Alan A. Stowe, 5415 Winchester Ave., Ventnor, N.J. 08406

Filed Aug. 8, 1978, Ser. No. 932,091
Int. Cl.² B65D *71/00*
U.S. Cl. 224—46 R **15 Claims**



1. An apparatus for carrying at least one folding chair or the

like, and a beach umbrella or the like, having a detachable shaft member, the apparatus comprising:

first, second and third substantially square, U-shaped members, having free ends, the free ends of the second and third members having corresponding openings, and each of the free ends of the first member being inserted through both openings of the other two members, the members defining edges of a substantially cubic structure;

means for preventing disengagement of said first member after said insertion through said openings, whereby said at least one chair and said umbrella are supported within said cubic structure; and,

means for engaging said detachable shaft member on said second and third members, enabling said cubic structure, including said at least one chair and said umbrella, to be supported by said shaft, said shaft forming a convenient handle.

4,221,314

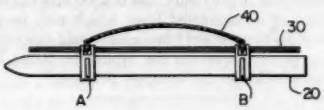
CARRIER FOR SKIS AND SKI POLES

Christopher L. Baker, Jr., 1960 Commonwealth Ave., #47, Brighton, Mass. 02135

Filed Jun. 27, 1978, Ser. No. 919,695

Int. Cl.[2] B65D *71/00*

U.S. Cl. 224—45 S **11 Claims**



1. A device for carrying skis and ski poles, said device comprising:

a pair of carrier bodies adapted to surround skis and ski poles such that said carrier bodies are spaced from each other lengthwise of the skis and ski poles, each said carrier body comprising two opposed side portions, each said side portion having an inside surface having therein a ski recess and a pole recess positioned opposite a corresponding ski recess and pole recess, respectively, in the opposed side portion, a hinge at the bottom of both said side portions rotatably connecting said side portions, and snap-lock means at the top of said side portions for locking said side portions together when said side portions are rotated toward each other about said hinge;

a plurality of attachment means on each of said carrier bodies for attaching a belt means to said carrier bodies, said attachment means comprising a plurality of recessed members, each of said carrier bodies having one of said plurality of recessed members positioned on an outside surface of each of said side portions and adjacent the top of each of said side portions; and

said belt means extending between said carrier bodies for lifting and carrying said carrier bodies and skis and ski poles carried thereby, said belt means having opposite ends, each said opposite end including connecting means for connection to the plural said recessed members provided on a respective said carrier body.

4,221,315

APPARATUS FOR REMOVING A DEAD-HEAD FROM A CASTING

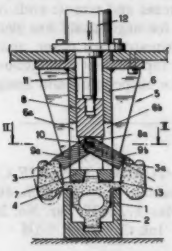
Guy Latchague, Le Chesnay, France, assignor to S.A. Automobiles Citroen and Societe Dite Automobiles Peugeot, both of Paris, France

Filed Jul. 6, 1978, Ser. No. 922,482

Claims priority, application France, Jul. 7, 1977, 77 21840; May 26, 1978, 78 16496

Int. Cl.[3] B26F *3/00*

U.S. Cl. 225—97 **14 Claims**



1. An apparatus for breaking a neck connecting a casting forming a first element to a dead-head forming a second element, comprising:

a support having a support axis and adapted to receive one of said elements for retaining same against twisting movement;

a pusher juxtaposed with said support and displaceable along said axis toward and away from said support; and

at least one lever articulated to said pusher about a pivot axis perpendicular to said support axis, said lever having a free end engageable with the other of said elements to apply a force to said other element in a direction inclined to said neck, thereby generating a bending moment breaking said elements apart at said neck.

4,221,316

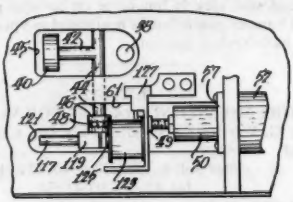
NAB TAPE CARTRIDGE ERASER AND SPLICE FINDER

John P. Jenkins, Towanda, and John Fesler, Mackinaw, both of Ill., assignors to International Tapetronics Corporation, Bloomington, Ill.

Division of Ser. No. 783,303, Mar. 31, 1977, Pat. No. 4,142,221. This application Mar. 7, 1978, Ser. No. 884,189

Int. Cl.[3] G11B *15/29, 15/18;* B65H *25/32*

U.S. Cl. 226—35 **9 Claims**



6. Apparatus for finding a relatively abrupt change in the thickness of strip material comprising a pair of rollers for engaging diametrically opposite surfaces of said strip, one of said rollers being resiliently biased toward the other, a coil having a soft magnetic core therein, and a permanent magnet mounted to be movable with said one roller and having one pole thereof spaced closely adjacent one end of said core whereby a change in thickness of said strip material alters the distance between said pole and said core end to generate a

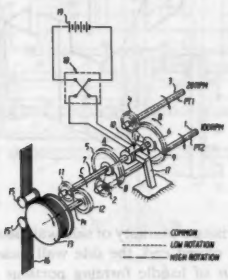
current in said coil, and means responsive to said current for developing a signal.

4,221,317

APPARATUS FOR CONTROLLING THE FEED OF YARN

Minoru Fukada, Sakado; Zen Sakaguchi, Hanno, and Kenichi Hasegawa, Tokyo, all of Japan, assignors to Hiraoka Kogyo Kabushiki Kaisha, Saitama, Japan

Continuation-in-part of Ser. No. 865,137, Dec. 28, 1977, abandoned. This application Jul. 12, 1979, Ser. No. 57,110
Claims priority, application Japan, Dec. 28, 1976, 51-160354
Int. Cl.[2] B65H *51/02*
U.S. Cl. 226—188 1 Claim



1. An apparatus for controlling the feed of yarn from a yarn feed drum which comprises:

first and second shaft members;

first and second gears respectively driven by said first and said second shaft members;

a third shaft member which has said first gear mounted at one end thereof and said second gear mounted at the other end thereof;

means for driving said third shaft member in a clockwise and counterclockwise direction; and

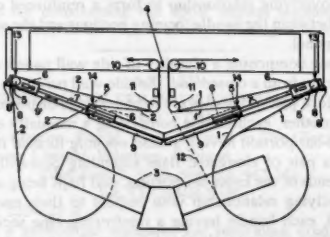
first and second one way clutch members respectively mounted between said first gear and said third shaft member and between said second gear and said third shaft member, said first and said second one way clutches being locked in a counter direction with respect to one another and said third shaft member being connected to said yarn feed drum.

4,221,318

DEVICE FOR DAMPENING THE FORCE EXERTED ON A STRIP MATERIAL DURING ENTRAINMENT

Giampiero Giusti, 52, Via Barbantini, 55100 Lucca, Italy

Filed Feb. 2, 1979, Ser. No. 9,089
Claims priority, application Italy, Oct. 9, 1978, 9609 A/78
Int. Cl.[3] B65H *23/08*
U.S. Cl. 226—195 3 Claims



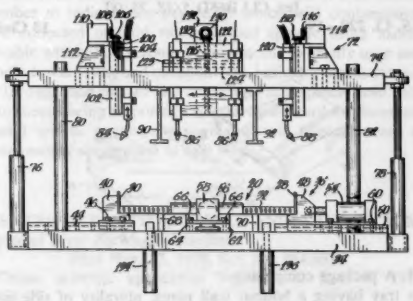
1. Apparatus for automatically dampening a strip moving longitudinally in its own plane as a result of a variable pulling force applied to the strip comprising: deflecting means for engaging a surface of the moving strip and deflecting the strip; guide means for guiding said deflecting means in a path extending at an angle to the plane of the moving strip; dampening means for biasing said deflecting means in a first direction in said path to engage and push against the moving strip and for permitting movement of said deflecting means in an opposite direction when the strip pushes against said deflecting means as a result of rapid and violent increase in the pulling force on the strip, said dampening means including a pneumatic cylinder having a piston forming first and second chambers within the cylinder, a piston rod connected to said piston and extending through one end of said cylinder, said piston rod being connected to said deflecting means so as to bias the latter in said first direction and so that movement of said deflecting means in said opposite direction by the moving strip moves said rod and piston in a manner to decrease the volume of said first chamber, said dampening means further including valve means responsive to a decreased volume of said first chamber for maintaining a fixed pressure in each of said cylinder chambers with the pressure in said second chamber being less than the pressure in said first chamber whereby said piston exerts a constant biasing force which is transmitted by said rod and deflecting means to the strip.

4,221,319

APPARATUS FOR WELDING METAL GRATING STRUCTURES

Raymond P. Paice, Hillside, Ill., assignor to Paco Corporation, Bridgeview, Ill.

Filed Aug. 9, 1978, Ser. No. 932,193
Int. Cl.[3] B23K *9/00, 9/32, 37/02, 37/04*
U.S. Cl. 228—25 14 Claims



1. An apparatus for welding a metal stair tread structure of a type including a generally rectangular grating formed of intersecting elements defining interstices therebetween, a pair of plates along opposite first and second side edges of the grating and a nosing element extending along a third edge of the grating and between the side plates, comprising a fixture for receiving and holding the grating, side plates and nosing in aligned relationship; a welding gun assembly having a plurality of MIG arc welding guns normally spaced from said fixture, said welding guns being arranged in three rows defining three sides of a rectangle and corresponding to the three side edges of the grating; and means for moving said welding gun assembly to position said welding guns adjacent selected junctures between the grating, side plates and nosing in order to form welds therebetween, said means for moving said welding gun assembly positioning at least some of said guns adjacent junctures within the interstices formed by the intersecting grating elements, and including means for moving said welding guns along their associated junctures to form elongate welds therealong, said means for moving said welding guns moving said rows separately from each other and moving at least two

adjacent rows of said rectangle in a direction orthogonal to one another during the welding operation.

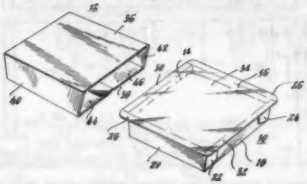
14. An apparatus for welding a metal structure of a type including a first member having first and second side edges and elements projecting from the first side edge and defining interstices therebetween, a second member along the first side edge and ends of the elements and a third member along the second side edge, comprising a fixture for receiving and holding the first, second and third members in aligned relationship; a welding gun assembly having a plurality of welding guns normally spaced from said fixture, said welding guns being arranged in two rows corresponding to the two side edges of the first member; and means for moving said welding gun assembly to position said welding guns adjacent selected junctures between the first, second and third members in order to form welds therebetween, said means for moving said welding gun assembly positioning at least one of said guns adjacent a juncture between the second member and ends of the elements of the first member and within the interstices and including means for moving said welding guns along their associated junctures to form elongate welds therealong, said means for moving said welding guns moving said rows separately from each other and moving said two rows in a direction orthogonal to one another during the welding operation.

4,221,320

COMPOSITE INCLUDING TRAY RESTRAINED WITH OUTER COVER

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,235
Int. Cl.³ B65D *5/38, 25/00*
U.S. Cl. 229—19 **13 Claims**



1. A package comprising:

a tray having a bottom wall panel, plurality of side wall panels and a first pair of flanges respectively extending outwardly from opposite ones of said side wall panels, said flanges being bendable about fold lines at the upper edges of said side wall panels from an extended position to a tucked position, the distance between respective outer edges of said first pair of flanges being reduced when the latter are bent from said extended positions thereof to said tucked positions thereof, each of said flanges being biased to return from said tucked position thereof to said extended position thereof; and

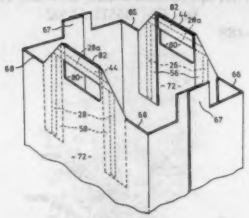
a generally rectangular outer cover member including top and bottom wall panels connected by side wall panels, the distance between at least portions of said side wall panels of the outer cover member being less than the distance between the outer edges of said flanges when the latter are in said extended position thereof, said tray being insertable into the outer cover member when the flanges are bent to said tucked position thereof, said tray being retained in the outer cover member by frictional engagement produced by outward biasing of said flanges against said side wall panels of the outer cover member.

4,221,321

PAPERBAG HAVING ARTICULATED HANDLE

Marinus J. M. Langen, Rexdale, and Edgars H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Ltd., Toronto, Canada

Filed Apr. 9, 1979, Ser. No. 28,532
Int. Cl.³ B31B *1/86;* **B65D** *33/06*
U.S. Cl. 229—54 R **20 Claims**



1. A bag comprising a plurality of side wall panels extending upwardly from a closed end, the side wall panels having an upper edge, a pair of handle forming portions each formed unitarily with one of said side wall panels and located at said upper edge and disposed opposite one another, a hand opening formed in each handle forming portion, a pair of elongated flaps secured to and disposed at opposite ends of said handle forming portion, said elongated flaps extending downwardly from the handle forming portion to which they are secured and being secured in an overlying relationship with respect to said side wall panels to form handle reinforcing straps.

18. In a method of making a bag from longitudinally elongated roll stock which has a pair of oppositely disposed longitudinally extending side edges, said roll stock serving to provide a plurality of bag forming portions serially connected to one another, each bag forming portion including a plurality of wall forming panels including side and bottom wall forming panels, said side wall forming panels having a pair of upper edges spaced a substantial distance from one another, each upper edge portion including a handle forming portion, a method of forming a reinforced handle comprising the steps of;

(i) cutting a hand opening in each handle forming portion,

(ii) cutting the web on opposite sides of each handle forming portion to form a pair of elongated flaps connected to each handle forming portion and extending laterally therefrom along its associated upper edge portion,

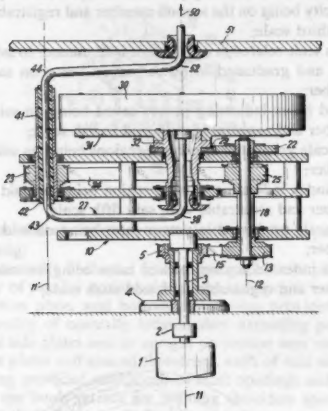
(iii) folding each elongated flap along its connection to its handle forming portion to extend inwardly from its handle forming portion in an overlying relationship with respect to its adjacent side wall panel and securing said flaps in said overlying relationship to form a reinforced connection between the handle forming portions and the adjacent side panel.

20. A bag comprising a plurality of side wall panels extending upwardly from a closed end, the side wall panels having an upper edge, a pair of handles at the upper edge disposed opposite one another, each handle comprising a manually engageable cross-bar portion having a hand opening formed therebelow and a pair of elongated flaps extending dowardly from opposite ends of the cross-bar portion, said flaps being secured in an overlying relationship with respect to their associated side panel, each handle having a reinforcing tape secured to and extending continuously along its cross-bar portion and its pair of elongated flaps to be secured to said side wall panels and the elongated flaps to reinforce said handles.

4,221,322
TUBE GUIDE INSERT AND CONSTRAINT FITTINGS FOR COMPENSATING ROTOR

James A. Drago, Brewster, and Steven R. Savitz, Astoria, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,174
Int. Cl.² B04B 9/08
U.S. Cl. 233—23 R 9 Claims



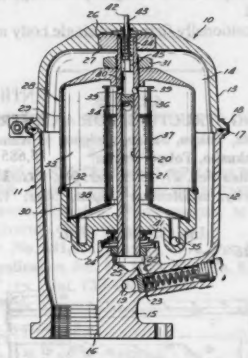
1. A compensating rotor having, in combination:
a frame assembly;
a central vertical axis;
means for causing the frame assembly to rotate about the central vertical axis at rotational speed w;
a centrifugal processing container;
means for causing the centrifugal processing container to rotate about the central vertical axis at rotational speed 2w;
a stationary source of fluid supply;
a flexible tubing loop for effecting the exchange of fluid between the rotating centrifugal processing container and the stationary source of fluid supply;
a tube guide mounted on the rotating frame enclosing the peripheral segment of the tubing loop;
a center spindle interfacing with the rotating centrifugal processing container enclosing the lower central segment of the tubing loop;
a centrifuge cover enclosing the compensating rotor having an opening for routing the upper central segment of the tubing loop to the stationary source of fluid supply;
wherein the improvement comprises:
means for constraining the lower central segment of the tubing loop in the region of the center spindle;
means for separating and constraining the peripheral segment of the tubing loop within the tube guide; and
means for constraining the upper central segment of the tubing loop in the region of the centrifuge cover.

4,221,323
CENTRIFUGAL FILTER WITH EXTERNAL SERVICE INDICATOR

Louis B. Courtot, Euclid, Ohio, assignor to The Glacier Metal Company Limited, Wembley, England

Filed Dec. 7, 1978, Ser. No. 967,242
Int. Cl.² B04B 9/06
U.S. Cl. 233—23 R 4 Claims

1. In a centrifugal separator for separating contaminants from contaminated fluids comprising shroud means defining a first chamber, a vertically extending spindle within said shroud means and having a hollow rotor mounted for rotation therewith, such hollow rotor defining a second chamber for receiving contaminated fluids to be separated, inlet port means at one end of said spindle, passage means through said spindle to said second chamber, means to rotate said rotor and thereby cause contaminants in contaminated fluids within said second chamber to migrate toward the sidewall of said second chamber under the influence of centrifugal force and to be separated from such contaminated fluids, said means to rotate said rotor comprising tangentially mounted outlet port means on said rotor in fluid communication with said second chamber to cause said rotor to rotate upon discharge of fluid from said

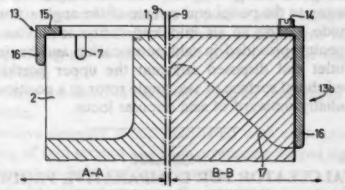


second chamber to said first chamber, in combination therewith the improvement comprising means responsive to the accumulation of contaminants at said sidewall of said second chamber to indicate the degree to which said contaminants have collected on said sidewall, said spindle being axially movable within said shroud, biasing means to axially urge said spindle towards one end of the shroud, indicator means extending through said shroud and contacting said spindle, said indicator means being responsive to axial downward displacement of said spindle against the urging of said biasing means as contaminants accumulate in said rotor.

4,221,324
CENTRIFUGE WITH VARIABLE ANGLE OF ATTACK

Raymond Frey, Zürich, Switzerland

Filed Nov. 27, 1978, Ser. No. 964,082
Claims priority, application Switzerland, Dec. 5, 1977, 14831/77
Int. Cl.² B04B 7/02
U.S. Cl. 233—26 4 Claims



1. A centrifuge for separating particles suspended in a liquid, especially for the separation of erythrocytes contained in a blood sample, comprising:
a rotor rotatable about a substantially verticle axis of rotation;
a number of holders each capable of supporting a centrifuge tube containing a liquid;

means mounting each of said holders at the rotor to be pivotable about a substantially horizontal axis;
said holders being located in a rest position when the rotor is stationary and upon rotation of the rotor pivoting out of this rest position under the action of the centrifugal force resulting from rotation of the rotor;
stop means for selectively limiting the pivoting-out movement of the holders;
said stop means comprising one single body member arranged at and surrounding said rotor and coming into contact with each pivoted-out holder at a respective contact location at the related pivoted-out holder;
said single body member being displaceably arranged at said rotor; and
means for positionally fixing said single body member at the rotor.

4,221,325

COOLING STRUCTURE FOR A CENTRIFUGE

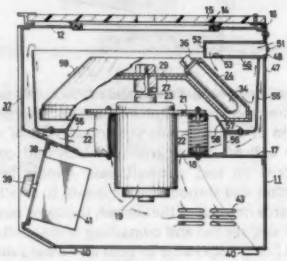
Tokihito Kubota, Tokyo, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,685

Claims priority, application Japan, Mar. 13, 1978, 53-32566[U]

Int. Cl.³ B04B *15/02*

U.S. Cl. 233—26 **13 Claims**



1. A cooling structure for a centrifuge comprising:
an outer casing;
a substantially truncated-cone-shaped angle rotor disposed in the outer casing;
a plurality of sample tube containers mounted in the angle rotor to extend radially along its peripheral surface, the upper ends of said sample tube containers being disposed in a circular locus at the upper end of said angle rotor and concentric with the axis of rotation of said rotor;
a motor disposed in the outer casing for driving the angle rotor; and
an air guide for guiding air from the outside of the outer casing to the peripheral surface of the angle rotor, said air guide having an air inlet end connected to an air inlet opening provided in said outer casing and having an air outlet end disposed adjacent the upper portion of the peripheral surface of said angle rotor at a position located radially outward of said circular locus.

4,221,326

CALCULATOR FOR COMPARATIVE PRODUCT INVESTMENT RECOVERY

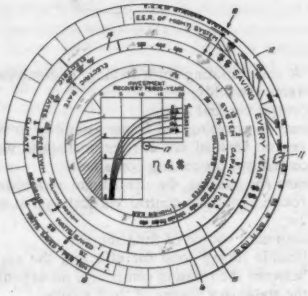
Tara C. Kandpal, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 20, 1976, Ser. No. 716,251

Int. Cl.² G06G *1/00*; G06C *3/00*

U.S. Cl. 235—78 F **3 Claims**

1. A calculator for computing the investment recovery period for investment expenditure of a first product over a second product comprising:
first, second, third, fourth, fifth and sixth members concentrically mounted for rotation relative one another;
a first scale graduated according to the efficiency of the second product being on said second member;
a second scale graduated according to the efficiency of the first product being on said first member and being registrable with said first scale;
a third scale graduated in power saved per unit of product capacity of the product being on the first member;
a first index for indicating power saved per unit of product capacity being on the second member and registrable with said third scale;
a fourth scale related in a predetermined manner to said third scale and graduated in power saved being on said first member;
a second index indicating power saved being on said third member and registrable with said fourth scale;
a fifth scale graduated in climate regions being on said third member;
a third index indicating climate region being on said fourth member and resistrable with said fifth scale;
a sixth scale graduated in power rates being on said fourth member;
a fourth index indicating power rates being on said fifth member and registrable with said sixth scale;



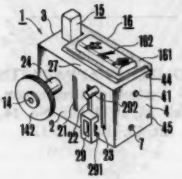
a seventh scale indicating financial savings each year being on said first member;
an eighth scale being graduated in product capacity being on said fifth member and registrable with said seventh scale;
a ninth scale being graduated in financial cost of said first product over said second product being on said sixth member;
a tenth scale being related to said eighth scale and indicating product capacity being on said fifth member and registrable with said ninth scale;
an eleventh scale being graduated in investment recovery factor units being on said sixth member;
a fifth index indicating investment recovery factor being on said first member and registrable with said eleventh scale;
a twelfth scale related to said eleventh scale and graduated in investment recovery factor units being on said sixth member;
a thirteenth scale relating to investment recovery period and related to said eleventh scale being on said sixth member;
a plurality of non-linear curves relating to financial interest rates being related to said twelfth and thirteenth scales being on said sixth member and being visible to convert from said investment recovery factor units to said investment recovery period units.

4,221,327

MINIATURE COUNTER HAVING ZERO RESET PUSH BUTTONS

Susumu Sato, Tokyo, and Koji Hamada, Yokohama, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 972,724
Int. Cl.[2] G06C 15/42
U.S. Cl. 235—144 HC 7 Claims



1. A miniature counter resettable to zero by a pushbutton comprising:

a substantailly U-shaped frame having a bottom plate and a pair of parallel upright side plates at opposite ends of the bottom plate, said bottom plate being provided with a plurality of centrally located slots extending parallel to said side plates and an upright projection near one of said side plates and spaced therefrom, each of said side plates being provided with a pair of shaft openings and a recess on the inner surface for defining shoulders spaced from said shaft openings;

a digit wheel shaft with opposite ends thereof securely fitted in one of said shaft openings in each side plate;

a plurality of digit wheels rotatably mounted on said digit wheel shaft, each digit wheel being provided with a gear on one side, a heart-shaped cam on the opposite side, and a digit shift pin gear around a portion of the perimeter of the digit wheel;

a zero resetting bracket member including a shaft, the opposite ends of which are securely fitted into the other shaft openings in said side plates, said zero resetting bracket member including a base provided with a bore through which said shaft loosely extends, a pair of opposed parallel supports at both ends of said base, each said support being provided with a shaft opening, and a plurality of cam press members having free ends extending beneath said respective digit wheels, said press members being of the same number as said digit wheels and said press members extending parallel to said side plates;

a pinion shaft extending through the shaft openings in the supports of said zero resetting bracket member, the ends of said pinion shaft extending beyond said supports to abut against said shoulders defined by said recess of said side plates so as to determine a minimum distance between the axes of said digit wheel shaft and of said pinion shaft;

a plurality of pinions rotatably mounted on said pinion shaft, each pinion being positioned adjacent one of said digit wheels so as to drivably mesh with the gear thereof, the pinion corresponding to the digit wheel of the second and subsequent orders of magnitude being drivably engaged by the digit shift pin gear of the digit wheel of the next lower order of magnitude such that when the last mentioned digit wheel completes one revolution, it steps the digit wheel having the next higher order of magnitude;

a reset button positioned between one of said side plates and said projection of said bottom plate so as to be slidable parallel to said side plates, said reset button being provided with an operating member adapted to engage an end of said pinion shaft at a point where it projects beyond the support of said zero resetting bracket member;

drive means for driving the digit wheel representing the lowest order of magnitude;

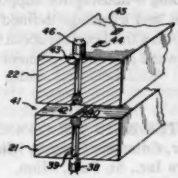
said press members of said zero resetting bracket member being respectively received in said slots of said bottom plate under normal conditions, whereby when said reset button is depressed, its operating member presses the projected end of said pinion shaft causing said zero resetting bracket member to rotate and disengage said pinions from said digit wheels and to withdraw said press members from said slots of said base plate such that said press members operatively engage their corresponding heart-shaped cams and thereby reset the digit wheels to zero.

4,221,328

DATA READ-OUT SYSTEM AND APPARATUS USEFUL FOR ANGULAR MEASUREMENTS

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Division of Ser. No. 691,078, May 28, 1976, Pat. No. 4,101,882.
This application Jul. 11, 1978, Ser. No. 923,543
Int. Cl.[2] G06K 7/00
U.S. Cl. 235—454 5 Claims



1. Apparatus for utilizing light to sense data from a flat coded member having a plurality of cells of transparent and opaque areas comprising:

first and second plates having inner surfaces thereof mounted in parallel, spaced apart relation on opposite sides of said coded member and defining a passageway therebetween for relative movement between said plates and said coded member, said plates each including a plurality of elongated apertures in the form of slits extending therethrough perpendicularly to the coded member, said plurality of slits in said first and second plates being arranged in a single row in each respective plate and each said slit having an interior opening adjacent said passageway and an exterior opening opposite said passageway with each slit in said first plate being in alignment with a corresponding slit in said second plate to define aligned pairs of slits;

a light source mounted in each said exterior opening of said first plate;

light sensitive detector means associated with each exterior opening of said second plate for producing output signals in response to light incident thereon;

a first cylindrical lens traversing the interior openings of said first plate in a direction normal to the longitudinal axes of said slits and mounted internally of said first plate; and

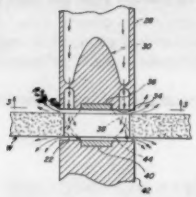
a second cylindrical lens traversing the interior openings of said second plate in a direction parallel to said first cylindrical lens and mounted internally of said second plate, said first and second lenses, said light sources and said light sensitive detector means substantially closing respective said interior and exterior openings.

4,221,329

SELF-CLEANING PERFORATION DETECTOR AND METHOD

Herbert R. Schneider, Pinellas Park, Fla., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,639
Int. Cl.[2] G06K 7/10
U.S. Cl. 235—458 8 Claims



1. In apparatus having a detector for detecting perforations in a web generating particulate matter or traveling in an atmosphere which may contain such matter, said detector including a signal emitter element and signal receiver element, the improvement comprising:

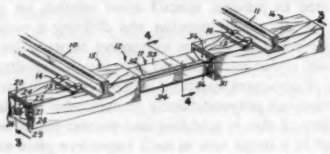
means for establishing a flow of fluid and for directing such fluid flow across said detector to prevent accumulation of particulate matter on said detector, said flow directing means including a housing for supporting at least one of said elements, and a passage defined by said housing for the flow to form a fluid curtain about said one element and extending toward said other element.

4,221,330

CENTER BUTT TIE CONNECTOR

Gary D. Schlaeger, Columbia Heights, Minn., assignor to Burlington Northern Inc., St. Paul, Minn.

Filed Jan. 27, 1978, Ser. No. 873,004
Int. Cl.[2] E01B 3/46
U.S. Cl. 238—31 1 Claim



1. A compound cross tie for use in railway roadbeds, consisting of

a pair of wooden end members each having a load bearing surface, a pair of opposite ends, and a bore extending longitudinally therethrough from end to end;

a wholly metallic joiner including a pair of end plates extending transversely of and spaced along an axis, a tubular member extending axially between said end plates and therebeyond for a distance which is short compared to the lengths of said wooden members, and reinforcing web members of angular cross section secured along their apices to diametrically opposite sites along said tubular member, and at their ends to said end plates, said tubular member being dimensioned to fit in the bores in said wooden members at first ends thereof;

means, including pressure plates at second ends of said wooden members and a compression member passing loosely through said tubular member, said bores, and said pressure plates and acting against said pressure plates, for retaining said wooden members in assembled abutting relation to said end plates of said joiner, while enabling longitudinal flexibility of said cross tie when assembled and so improving the distribution of weight from said cross tie to a supporting roadbed;

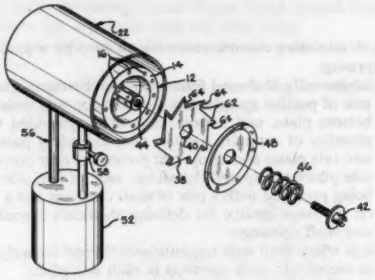
and means preventing relative rotation of said wooden members about said axis, with respect to said plates, in response to a load moving across said load-bearing surface.

4,221,331

ATOMIZING APPARATUS

Leo Goran, Jr., 6345 Westmoor, Birmingham, Mich. 48010

Filed Feb. 26, 1979, Ser. No. 14,974
Int. Cl.[3] B05B 7/32
U.S. Cl. 239—121 23 Claims



1. Apparatus for converting a liquid into an atomized mist from an orifice head having a surface in a flat plane in which at least one orifice is located for discharge of a liquid from the head, and liquid supply means are associated with the head for causing a liquid to emerge in a stream from each said orifice, characterized in that a blade is mounted adjacent to said head for rapid continuous movement on said surface across said orifice to contact liquid emerging from said orifice to shear particles of liquid from the main stream of liquid emerging from said orifice and discharge the particles therefrom as a fine mist, said blade having a flat area for riding on said surface and a leading edge for contacting the emerging liquid, said leading edge defining a rake angle relative to said surface, and blade-actuating means to move said blade rapidly on said surface repeatedly across said orifice so that said leading edge repeatedly contacts said emerging liquid.

4,221,332

ROTARY ATOMIZER WITH STACKED CONES

Edward J. Bals, Bromyard, England, assignor to Pennbrook Corporation, Far Hills, N.J.

Filed Sep. 14, 1978, Ser. No. 942,159
Claims priority, application United Kingdom, Sep. 14, 1978, 38247/77
Int. Cl.[2] B05B 3/02
U.S. Cl. 239—223 7 Claims

1. A rotary atomizer comprising:

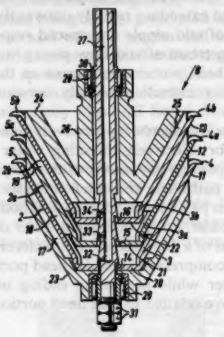
a plurality of concentric hollow cones nested within one another and adapted to be rotated about their central axis, each cone having a base at its narrow end and a toothed peripheral edge of its wide end;

a large number of radial grooves on the inner surfaces of the cones for directing streams of liquid to be atomized outwardly to the toothed peripheries of the cones;

a small number of ribs on the outer surfaces of the cones

mating with only some of the grooves on adjacent cones to space the cones apart;

a stationary spindle passing axially through said cones; and



thrust bearings between said cones and said spindle for holding said cones together for rotation as a rigid unit.

4,221,333

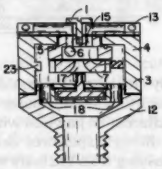
CONTROLLED THRUST OSCILLATING SPRINKLER

Ricardo A. Rodriguez, 39 Suffolk Ave., Hialeah, Fla. 33010

Filed Oct. 6, 1978, Ser. No. 949,059

Int. Cl.[2] B05B *3/14*

U.S. Cl. 239—255 **8 Claims**



1. An irrigation device comprising,

a non-rotating member having a central liquid-receiving bore for connection to an external source of liquid under pressure,

a non-rotating hollow housing fixedly secured to said connecting member,

a rotating head having at least two opposed, commonly aligned liquid discharge nozzles rotatably attached to said hollow housing,

said hollow housing defining a first liquid-receiving interior chamber,

ball housing means disposed in said first interior chamber for defining a second or innermost interior chamber,

said ball housing means attached to said rotating head so that rotation of said head effects concomitant rotation of said housing means,

said ball housing means having a pair of opposed outlets in fluid communication with said discharge nozzles,

said ball housing means having a bistable inlet that provides fluid-communication between said first interior chamber and said second or innermost interior chamber,

said ball housing means accomodating a free-floating ball plug adapted to seat and seal said outlets on a reciprocating basis as urged by hydraulic forces appearing in said innermost chamber,

said inlet in a first stable state when disposed at one end of said innermost housing and in a second stable state when disposed at an opposed end of said innermost housing,

means for causing said bistable inlet to change from one stable state to the other stable state when an irrigation sweep has been completed.

4,221,334

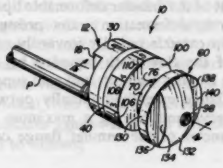
ADJUSTABLE NOZZLE FOR CROP SPRAYING

Gilman O. Christopher, 924 W. 11th Pl., Mesa, Ariz. 85201

Filed Apr. 18, 1979, Ser. No. 31,191

Int. Cl.[3] A62C *31/02*

U.S. Cl. 239—394 **10 Claims**



1. Spray nozzle apparatus for providing a fan-shaped spray of liquid, comprising, in combination:

base means;

a first aperture extending through the base means for connecting to a flow of liquid to be sprayed;

spray head means rotatably secured to the base means including

discharge nozzle means comprising a plurality of discharge nozzles spaced apart from each other and selectively alignable with the first aperture of the base means for receiving a flow of liquid to be sprayed,

a circular concave face adjacent the discharge nozzle means against which the liquid flows from a discharge nozzle selectively aligned with the first aperture, and

each discharge nozzle of the plurality of discharge nozzles is tangent to the circular concave face to provide a fan-shaped spray of the liquid when aligned with the first aperture.

4,221,335

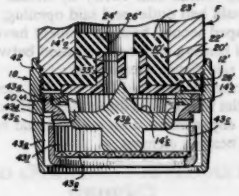
FLOW CONTROLLER AND SUPPORT THEREFOR, AND FLOW CONTROLLER-NOISE REDUCER COMBINATIONS

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Sep. 1, 1978, Ser. No. 938,901

Int. Cl.[2] E03C *1/084*

U.S. Cl. 239—428.5 **10 Claims**



1. In a flow controller for limiting the amount of liquid discharged through a flow appliance that is to be removably secured to the discharge end of a flow conduit, wherein said flow controller includes

a unitary, elongated, annular, molded body shaped to provide an outermost annular flange that, upon connection of the flow appliance to the flow conduit, operates to provide a seal to prevent leakage of fluid at the joint between the appliance and the flow conduit,

an innermost annular portion of said molded body defining at its innermost periphery an annular resiliently deform-

able lip whose deformation under the pressure of flowing fluid operates to constrict the size of the flow orifice bounded by said lip, for limiting the volume of fluid flow therethrough to a predetermined maximum,

and an annular support for central portions of the molded body that are located axially between said outermost annular flange and said annular deformable lip, said support including an elongated sleeve that serves to space the deformable lip within the flow conduit upstream of said seal between the conduit and the flow appliance; the improvement comprising, in combination:

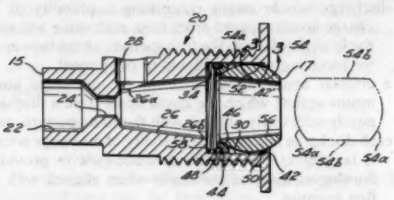
the radial extent of the annular deformable lip being selected so that prior to deformation under pressure of flowing water said lip extends radially inwardly of an upstream projection of the flow path bounded by the elongated sleeve of the annular support, and said support including an annular flange extending radially outwardly of said elongated sleeve and having a maximum diameter less than the diameter of the annular flange on the molded body.

4,221,336

NOZZLE WITH DIRECTIONALLY VARIABLE OUTLET

Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604

Filed Oct. 31, 1978, Ser. No. 956,372
Int. Cl.[3] E03C *1/08*
U.S. Cl. 239—428.5 13 Claims



1. An adjustable nozzle comprising:

a rigid unitary body provided with fluid inlet means communicating with a cavity at one end of said unitary body, said cavity having an outer end;

flange means integral with said rigid unitary body at said outer end defining an opening into said cavity;

a first bearing element contained within said cavity;

a directional ball outlet of slightly greater maximum outer diameter than said opening whereby said ball outlet is mounted within said cavity by means of a press-fit between said ball outlet and said opening;

a ring shaped second bearing element having a low-friction internal bearing surface interposed between said ball outlet and said flange means; and

spring means biasing said first bearing element against said ball outlet to urge said directional ball outlet into rotatable sealing engagement with said internal bearing surface of second bearing element.

4,221,337

AERATOR AND SPRAY COMBINATION

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 17, 1979, Ser. No. 4,062
Int. Cl.[2] B05B *1/16*
U.S. Cl. 239—428.5 5 Claims

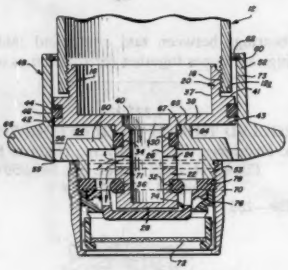
1. In a faucet attachment for selectively discharging water therefrom in one of two alternate ways, the improvement comprising, in combination:

an adapter for securement to a liquid outlet and shaped to provide an upstream, large diameter, head portion and a downstream, smaller diameter, nipple portion, said nipple portion being axially elongated with flow passageway means provided from said adapter through only the longitudinal wall of said axially elongated nipple;

two axially spaced annular nipple seal means carried on said nipple and extending radially outwardly of the longitudinal wall of said nipple and spaced respectively upstream and downstream of said flow passageway means;

an annular head portion seal means on the head portion of the adapter extending radially outwardly of said head portion;

a molded body member operatively associated with said adapter for selectively directing water that issued from the flow passageway means of the adapter's nipple along alternate paths one of which includes a flow chamber bounded in part by said adapter, said body member including an annular, axially elongated, outer sleeve whose inner diameter is of a dimension to circumferentially engage and sealingly compress the annular head portion seal means of the adapter while permitting sliding movement of said outer sleeve relative to said head portion seal means;



an annular radially elongated wall molded integral with and extending inwardly from said outer sleeve and forming therethrough adjacent its junction with the outer sleeve, a series of flow-through apertures defining one alternate path for water issuing from the body member, said radially elongated annular wall defining at its inner edge an axially elongated inner sleeve, concentric with said outer sleeve but of lesser axial length, the inner diameter of said inner sleeve being of a dimension to circumferentially engage and sealingly compress one of the nipple seal means, the axial length of the inner sleeve being selected and shaped so that when said inner sleeve sealingly engages the upstream one of the nipple seal means, there exists downstream of the radially elongated wall the other alternate path for water issuing from the body member; and

two means on the body member for cooperation with the head portion of the adapter for limiting the axial movement of the body member in both axial directions relative to the adapter.

4,221,338

COMBINATION SPRAY AND AERATOR

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

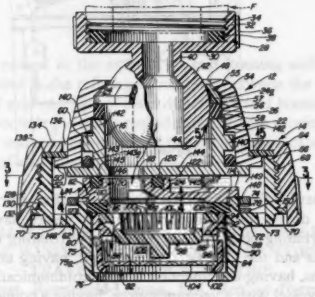
Filed Feb. 8, 1979, Ser. No. 10,494
Int. Cl.[2] B05B *1/16;* E03C *1/084*
U.S. Cl. 239—428.5 9 Claims

1. In a spray-or-aerator appliance that includes an upstream axially elongated adapter means through which flowing liquid is introduced into the appliance from a source under pressure, and a downstream discharge head shaped and arranged to provide, at the discharge end thereof, two concentric flow passageway means including a relatively large central passageway with an aerator construction therein, and an outer annulus of circumferentially spaced, smaller, spray apertures; the improvement comprising, in combination:

the upstream adapter means having relatively non-rotatable character and being shaped to provide adjacent its downstream end an internal, non-circular, socket means surrounding a central flow passageway;

the discharge head being axially positioned upon the downstream end of said adapter means and being rotatable relative to said adapter means, the discharge head providing therein an upstream facing central disc with an eccentric aperture therein, said upstream facing disc being operative to substantially close off liquid flow to the large central passageway except through said eccentric aperture;

an internal diverter member positioned between said upstream adapter means and the discharge head, said diverter member being shaped to provide: (a) an upstream non-circular means for interfitting engagement with the non-circular socket means of the upstream adapter means;



(b) an eccentrically apertured, central disc adapted for abutment with a portion of the central disc of the discharge head; and (c) laterally apertured flow means positioned in a flow path between said eccentrically apertured central disc of the diverter member and the circumferentially spaced spray apertures of the discharge head; and

compression seal means positioned between portions of the central discs of the internal diverter and of the discharge head, and surrounding the eccentric aperture in the central disc of the discharge head, for isolating downstream liquid flow in the discharge head either through only the pair of aligned eccentric apertures of the two discs, so that said flow will be directed through the large central passageway of the discharge head, or through an alternate flow path, that includes said laterally apertured flow means of the diverter member when the eccentric apertures are not aligned, that communicates with the outer annulus of smaller spray apertures in the discharge head.

4,221,339

LIQUID SPRAYING DEVICE

Satonovu Yoshikawa, Komae, Japan, assignor to Nakaya Sangyo Kabushiki Kaisha, Aichi, Japan

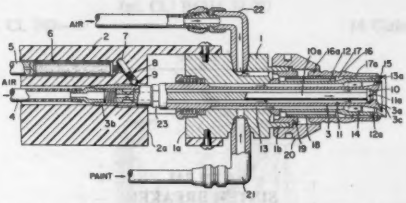
Filed Nov. 20, 1978, Ser. No. 962,036
Claims priority, application Japan, Dec. 3, 1977, 52-145493
Int. Cl.[2] B05B 7/10
U.S. Cl. 239—704 **6 Claims**

1. A liquid spraying device, comprising:

a first tube made of electrically conducting material and having at a front end thereof a flared, bell-shaped opening having a concavely conical front surface which diverges forward in the direction of liquid spray, at a specific vertex angle;

vortex flow means located within said first tube and defining, with said wall of said first tube, a primary air flow passage, said vortex flow means having a forward head portion having a shape for ejecting primary air flowing through said air passages and causing said air to flow vortically in the shape of a cone along said concavely conical front surface;

a second tube, made of electrically conducting material, being coaxially disposed around said first tube and defining together therewith a liquid passage through which liquid flows, said second tube having at a front end thereof a flared, bell-shaped opening having a concavely frusto-conical front surface around said first tube concavely conical front surface, whereby liquid flowing through said liquid passage forms a cone-shaped thin film on said frusto-conical front surface, said frusto-conical front surface diverging forward at a vertex angle smaller than said vertex angle of said first tube front surface, the forward edge of said first tube conical front surface being disposed axially to the rear of the forward edge of said second tube frusto-conical front surface whereby said vortically flowing air collides against said thin film of liquid for causing said film to vibrate;



a third tube coaxially disposed around said second tube for defining together therewith a secondary air flow passage, said third tube having a front end disposed around said front end of said second tube and having vortical flow means for causing secondary air to flow vortically in the same direction as said vortically flowing primary air from said primary air flow passage;

air supply means for supplying primary and secondary air flows under pressure through said primary and secondary air flow passages respectively to said front ends thereof;

liquid supply means for supplying said liquid under a pressure through said liquid passage to said front end thereof; and

voltage means for applying a high voltage of one polarity to said first and second tubes for creating respective electrostatic fields for cooperating with said vortical flows of primary and secondary air for promoting atomization and spraying of the liquid.

4,221,340

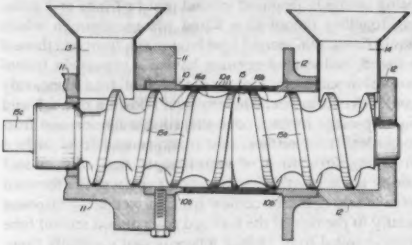
METHOD AND APPARATUS FOR PRODUCING A MASA PRODUCT

Claudio dos Santos, Salt Lake City, Utah, assignor to Beehive Machinery, Inc., Sandy, Utah

Filed Jan. 11, 1979, Ser. No. 2,664
Int. Cl.[3] B02C 18/14
U.S. Cl. 241—7 **11 Claims**

1. A method of processing raw, dry, corn kernals into a milled masa product, comprising the steps of heating and soaking the dry corn kernals; breaking the hulls of the so-treated corn kernals; and transporting the hull-broken kernals within and along a closed-ended tube, perforated as a sieve, from the closed ends thereof toward the middle thereof as a mass of partially processed material, so that said material is forced out

of said tube through the perforations thereof to thereby complete the processing of said material and form the desired masa



product, said perforations being very small relative to the size of the corn kernals.

4,221,341

SINTER BREAKER

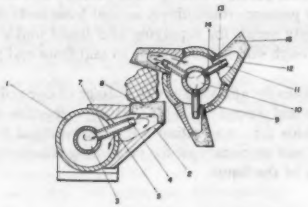
Konrad Schymura, Oberursel, and Manfred Schafer, Frankfurt, Main-Harheim, both of Fed. Rep. of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1978, Ser. No. 937,788

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742880

Int. Cl.³ B02C *13/28*

U.S. Cl. 241—67 **7 Claims**



1. A sinter crushing machine having a crushing screen member with a row of spaced hollow tooth elements extending laterally from an elongate hollow body and a roll member having tooth elements projecting therefrom about the periphery thereof so arranged that tooth elements of the roll member pass between the tooth elements of the screen member to crush sinter lumps to fragments which then pass through the tooth elements of the screen member, the improvement wherein the screen member comprises an elongate housing having spaced hollow crushing tooth elements therealong and having inner and outer concentric fluid circulating passages extending lengthwise of the housing, a tube leading from said inner passage through the outer passage into each of said hollow tooth elements into which it discharges a cooling fluid, a fluid outlet leading from each tooth element through which cooling fluid from each tooth enters the outer passage, means at one end of the housing for introducing cooling fluid into the inner passage, and means at the other end of the housing for discharging spent cooling fluid from the outer passage.

4,221,342

DEVICE FOR PROCESSING RARE EARTHS

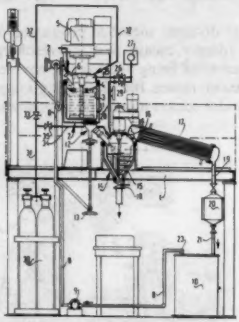
Jan C. Tadema, Bergen N. H., Netherlands, and Hans-Günter Domazer, Essen-Stadtwald, Fed. Rep. of Germany, assignors to Wiener & Co. B.V., Amsterdam, Netherlands

Filed Oct. 18, 1978, Ser. No. 952,321

Claims priority, application Netherlands, Dec. 23, 1977, 7714387

Int. Cl.² B02C *17/00, 23/24, 23/34*

U.S. Cl. 241—79 **5 Claims**



1. A device for processing rare earths characterized by a grinding device comprising a jacketed vessel having ball-shaped grinding bodies and an agitator for rotating the grinding bodies and the material to be ground, having an inlet for rare earths, having a connection for the communication of the grinding vessel with a vacuum source, having a connection for the supply of a rare gas, particularly argon, having a connection for the supply of liquid hexane and having near the bottom side a tapping opening provided with a sieve for the ground product and the hexane, said opening communicating with an evaporation vessel provided with a heating jacket and having on the top side a connection with a vacuum source, a connection for the supply of rare gas, particularly argon, and an outlet for the vapour-like product communicating with a condenser and on the bottom side an outlet for the ground product, whilst the outlet of the condenser communicates with a control vessel, which communicates with a hexane supply vessel, an outlet of which communicates through a pump with the inlet of the grinding device.

4,221,343

VENTED DISC REFINER

Lawrence Skeen, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

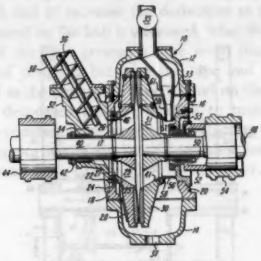
Continuation of Ser. No. 865,176, Dec. 28, 1977, abandoned, which is a continuation of Ser. No. 656,003, Feb. 6, 1976, abandoned. This application Apr. 30, 1979, Ser. No. 34,392

Int. Cl.³ B02C *7/11*

U.S. Cl. 241—244 **15 Claims**

1. A refiner, including a housing having an inlet thereto and an outlet therefrom, at least one pair of refining discs within said housing, each said disc having an operating face embodying means defining thereon a refining surface, said one pair of discs being arranged with their refining surfaces positioned in an opposed, adjacent and closely spaced relation to receive and refine therebetween, on rotation of one relative the other, the material to be refined, which is introduced to said housing by way of said inlet, which material subsequent to its refining is directed from said housing by way of said outlet, and means mounting said one pair of discs providing for at least one thereof to rotate relative the other, characterized in that a first rotatable one of said pair of discs has therein at least one passageway which extends therethrough and has one end in open communication with the space between the adjacent faces of

said discs and its opposite end in open communication with means in said housing which forms a direct extension of said one passageway and provides therewith a continuous duct connected with another outlet from said housing which is remote from said inlet, said duct being constructed and arranged to extend to the exterior of said housing and to pass steam created in the refining of material between the refining surfaces of said one pair of discs directly to said housing exterior and preclude the steam passed thereby from moving to the vicinity of said inlet or reentering the environment of said discs interiorly of said housing.



4,221,344

APPARATUS AND METHOD FOR CONTROLLING TEXTILE WINDER PACKAGE DRIVE MOTORS AND TRAVERSE DEVICE MOTORS

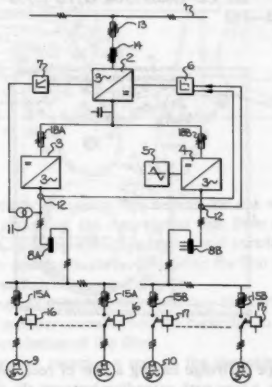
Hans Lohest, Remscheid-Lennep, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,220

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811158

Int. Cl.³ B65H *54/38*

U.S. Cl. 242—18.1 **14 Claims**



1. In a textile strand winder having package drive motors and traverse device motors, apparatus for jointly controlling the motors and comprising:

first means for supplying variable frequency alternating current electrical power to a set of package drive motors;

second means for supplying variable frequency alternating current electrical power to a set of traverse device motors;

signal means coupled to said second supply means for varying the frequency of the current supplied by said second supply means to said traverse device motors for thereby alternately accelerating and dynamically braking said motors; and

means interconnecting said first and second supply means for delivering to said package drive motors at least a portion of the electrical power available from said traverse device motors due to generation of back electromotive force during recurrent braking whereby total power drawn by the winder is reduced and operating efficiency facilitated.

4,221,345

ROTARY FILAMENT FEEDER

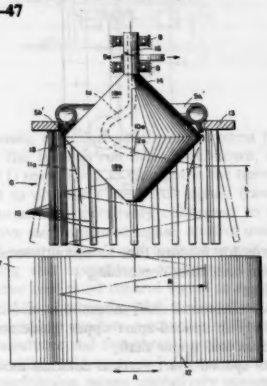
Heinz Schippers; Karl Bauer; Erich Lenk, and Peter Dammann, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Fed. Rep. of Germany

Continuation of Ser. No. 664,660, Mar. 8, 1976, abandoned. This application May 1, 1978, Ser. No. 901,595

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1975, 7507160; Sep. 9, 1975, 2540148

Int. Cl.³ B65H *54/80*

U.S. Cl. 242—47 **14 Claims**



1. Apparatus for feeding filaments of synthetic, thermoplastic polymers in the form of helices to a collector, comprising a symmetrical rotary body rotatable about a vertical axis of rotation and having an upper section and a lower section, said lower section being a downwardly tapering, frusto-conical section coaxial with said vertical axis of rotation and tapering inwardly towards said vertical axis of rotation, said body having a filament passage of small diameter contained within said body, the upper, filament inlet portion of said passage being substantially coaxial with said vertical axis of rotation, said passage having an intermediate portion which extends in downward and lateral composite curvature from said inlet portion to a filament-emergence opening in the surface of said downwardly tapering, frusto-conical, lower section of said body in the upper portion of said lower section adjacent the upper end thereof, the tangent of the part of said passage adjacent said emergence opening being at an acute angle in the range of 30° to 80° relative to the radius of the circle of rotation of said emergency opening, said emergence opening being radially outwardly and axially downwardly spaced from said inlet portion of said passage whereby said opening orbits about said vertical axis of rotation in a circle of rotation, and an annular slot nozzle with an annular slot opening which is directed substantially downwardly and is positioned in proximity to said emergency opening and above and concentric with said circle of rotation and which is adapted to discharge a downwardly flowing, annular curtain of air which flows downwardly and radially inwardly about the tapered surface of said lower section and in which annular curtain of air the descending helices of the filaments are conveyed from said

orbiting emergence opening and are laid as spiral windings in said collector.

4,221,346

FEEDER MAGAZINE FOR CONTINUOUSLY OPERATING FILM-DEVELOPING MACHINES

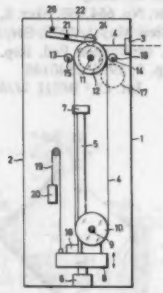
Joachim Simon, Erkrath; Werner Wachholder, Solingen, and Hans-Georg Seifert, Düsseldorf, all of Fed. Rep. of Germany, assignors to Hostert AutomataDusseldorf GmbH & Co., Dusseldorf, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,306

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759175

Int. Cl.³ B65H *25/00, 25/32, 51/20*

U.S. Cl. 242—55.01 **10 Claims**



1. Apparatus for feeding film to a continuously operating film-developing machine, comprising

(a) a housing;

(b) an upper horizontal shaft mounted in said housing;

(c) a plurality of spaced-apart upper guide rolls rotatably mounted on said upper shaft;

(d) a pair of spaced-apart vertical columns mounted in said housing;

(e) a slide extending between said columns and mounted for vertical sliding movement thereon;

(f) a lower horizontal shaft mounted on said slide;

(g) a plurality of spaced-apart lower guide rolls rotatably mounted on said lower shaft; the improvement characterized by

(h) sensing means mounted for engagement with at least one of said upper guide rolls for sensing the presence or absence of film on said one guide roll;

(i) first brake means on said slide and connected to said sensing means for arresting the vertical movement of said slide; and

(j) second brake means connected to said sensing means and adjacent said plurality of upper guide rolls, said second brake means mounted for braking engagement with said plurality of upper guide rolls;

(k) whereby when said sensing means senses the absence of film on said one upper guide roll said first and second brake means are activated.

4,221,347

ADJUSTABLE REEL FOR WINDING WIRE COILS

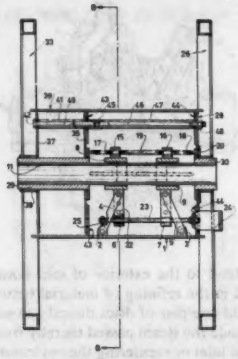
John Hill, Walden, Parkfields La., Fearnhead Nr. Warrington, England

Filed Dec. 13, 1977, Ser. No. 860,414

Int. Cl.² B65H *75/22, 75/24*

U.S. Cl. 242—110.2 **17 Claims**

1. A reel for use in making coils of wire and the like comprising a drum having two end flanges at least one of said flanges being detachable from the drum for removal of the coil from the drum, the drum being formed of an assembly of segments radially displaceable between an expanded position for winding of a coil and a contracted position for removal of the coil, said assembly including slots in one end thereof, means within the drum operable to displace the segments between said expanded and contracted positions one of said end flanges having spokes and being mounted for adjustment axially relative to the



drum for setting the effective winding width to any one of a number of different sizes, the reel further comprising a support member located inwardly of the said spoked flange to support each said segment for said radial displacement, the arrangement being such that during axial movement of the one end flange said spokes are accommodated in said slots in said assembly of segments.

4,221,348

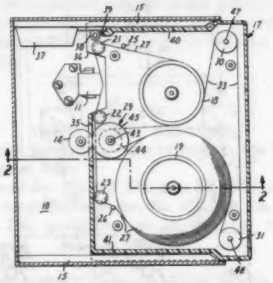
BELT DRIVEN TAPE CARTRIDGE

Gary D. Moeller, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 6, 1979, Ser. No. 27,785

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—192 **4 Claims**



1. In a tape cartridge having a pair of reel hubs on spaced parallel axes, a tape path extending between the reel hubs and along one edge of the cartridge across a cutaway portion in the cartridge edge wall for access by a transducer, the tape path being defined by a pair of tape guides, one on each side of said cutaway portion, a length of tape extending along the tape path and wound on the reel hubs in opposite directions about their axes, a drive belt guide path defined by a belt driving roller and a pair of belt guide members, the belt guide path being spaced from the tape path and passing between the reel hubs from the belt driving roller to each of the belt guide members, and an elastic drive belt extending along the belt guide path and contacting the tape on the reel hubs, the improvement comprising:

a pair of tape wrap pins defining the tape guide path with the tape guides, one tape wrap pin being positioned between each reel hub and the adjacent tape guide, each tape wrap pin being positioned to deflect the tape from a straight line path between the tape supply on the reel hub and the tape guide when a portion of the length of tape is wound on the reel hub and to increase the deflection as the amount of tape wound on the hub is increased, whereby the extent of wrap of the tape around a tape wrap pin and thus the frictional coupling between the tape and the pin is decreased as the amount of tape wound on the adjacent reel hub is decreased thereby tending to maintain the tape tension constant at a transducer contacting the tape in the cutaway portion of the cartridge as the length of tape is transferred from one reel hub to the other.

4,221,349

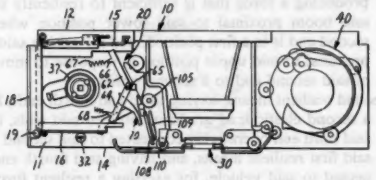
AUTOMATIC FILM THREADING MECHANISM

Russell F. Clampitt, New Brighton; Edwin Kalash, Rockford; Dennis C. Schuette, New Hope, and Melvin J. Straub, Plymouth, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1979, Ser. No. 36,160

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—192 **8 Claims**



1. An automatic threading mechanism for use with a film cartridge for threading the convoluted film from a reel in a cartridge into a photographic apparatus, said cartridge having a discontinuity in one side thereof allowing the film to exit, said automatic threading device comprising

means defining a magazine for receiving the cartridge;

a stripping member movable into the cartridge to engage the outer convolution of the film;

drive means for rotating a reel in the magazine in either direction;

wherein said stripping member comprises an arm supporting at one end thereof a pivotally mounted pad positioned to initially engage the wound film and movable away from the film upon movement of the film in an unwinding direction, stripping finger means for skiving the free end of the film from the roll of film and roller means engagable with the film for positioning the stripping finger means, for holding the outer convolutions of the film against the roll of film to cause rotation therefor with the roll, and spring means for biasing said one end of said arm toward the center of said magazine.

4,221,350

AUTOMATIC DIRECTION STABILIZATION SYSTEM

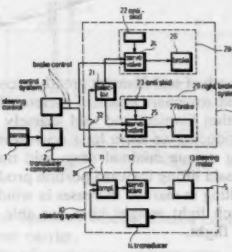
Werner Moser, Munich; Volker V. Tein, Ottobrunn; Albert Dirlewanger, Gauting; Hans Offenbeck, Ottobrunn, and Walter Stoeckle, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 850,904

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1976, 2652289

Int. Cl.² B64C *25/50*

U.S. Cl. 244—50 **8 Claims**



1. An automatic direction stabilization system for aircraft, especially for the landing run after touchdown, comprising sensor means (1) responding to changes in the travel direction of the aircraft to provide a measured signal, transducer and comparator means (2) operatively connected to said sensor means to receive said measured signal, control means (3) providing a rated control signal, said transducer and comparator means (2) being also operatively connected to said control means to receive said rated control signal in addition to said measured signal for comparing the measured signal and the rated control signal to produce a corrected difference control signal, said transducer and comparator means (2) having output means providing said corrected difference control signal, and steering performing means operatively connected to said output means of said transducer and comparator means (2) for responding to said difference control signal whereby a pilot caused steering action is automatically corrected to provide a steering action required for substantially eliminating the effects of disturbing yaw moments, said steering performing means comprising wheel steering means as well as left wheel brake means and right wheel brake means, amplifier means operatively interconnecting said transducer output means and said wheel steering means, selector switch means operatively connecting said transducer output means to said left or right wheel brake means, said selector switch means being responsive to the polarity sign of said difference control signal, whereby the braking action of the controlled wheel brake means is varied by varying the hydraulic brake pressure in the respective brake means in an increasing or decreasing manner without exceeding a given maximum brake pressure.

4,221,351

KITES

Raymond P. Holland, Jr., Roswell, N. Mex., assignor to The Holland Corporation, Roswell, N. Mex.

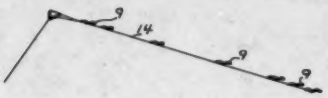
Filed Apr. 13, 1978, Ser. No. 896,044

Int. Cl.³ B64C *31/06*

U.S. Cl. 244—153 R **4 Claims**

1. A kite consisting of a light weight, compact, lifting forward portion, and a long, light weight, low drag, gravity-sensing rearward portion; said forward portion comprising a single lifting surface downwardly concave continuously from one of the lateral extremities of the kite to the opposite lateral extremity of the kite, said single concave lifting surface producing essentially all of the lift of said kite, said lifting surface consist-

ing of a laterally flexible wind-formed sheet in tension attached to two upper ends of a flying bridle at locations limited to one point of attachment at each of the two lateral extremities of said lifting surface; and said rearward portion comprising a thin trailing filament, the overall length of said filament exceeding ten times the maximum fore and aft chord length of said lifting surface, free trailing low drag streamers attached to said trailing filament, said streamers being sparsely spaced such



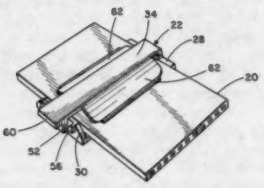
that the overall length of said filament greatly exceeds the total length of all of said streamers attached thereto; the combination of said long thin filament and said sparsely spaced low drag streamers producing an extra long downwardly angling trailing tail having unique minimal drag; said trailing tail in combination with said lifting forward portion producing stabilizing actions resulting in marked increases in wind speeds and turbulence at which light weight kites are able to perform efficient stabilized flight.

4,221,352

FLAT CABLE CLAMP

Jack E. Caveney, Hinsdale, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Sep. 25, 1978, Ser. No. 945,379
Int. Cl.[2] F16L *3/08*
U.S. Cl. 248—74 PB **13 Claims**



1. A clamp for mounting from one up to a maximum predetermined number of elongate objects each having opposed generally flat first and second sides, such as flat cables, along a predetermined route on a support such as a panelboard, said clamp comprising:

a base extending transversely of said route and having a surface lying in a first plane for engaging a first object side,

a cover connectable to said base and comprising a bridge portion extending transversely of said route and spaced a predetermined distance from said surface, and

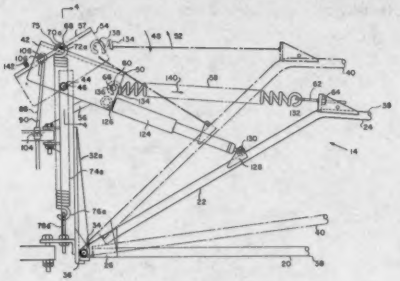
resilient pusher means integral with said cover and formed of the same material as said cover extending from said cover toward said base surface and having a distal end engageable with a second object surface, said pusher means being deflectable from an unloaded position wherein said cover is connected to said base without any objects disposed between said bridge portion and said base surface and wherein the part of the distal end closest said base surface lies in a second plane parallel to said first plane and spaced therefrom a distance less than the thickness of one of said objects to a maximum load position wherein said cover is connected to said base with said maximum predetermined number of objects positioned between said bridge portion and said base surface whereby, independent of the number of objects held from one to the maximum number, the objects are firmly compressively held against said base surface to restrain their movement relative to said support, said pusher means comprising a flap extending inclined outwardly from said cover toward said first plane when said flap is in its unloaded position.

4,221,353

VEHICLE AND BOOM ASSEMBLY

Patrick Kuhn, and Donald K. Schmidt, both of Bismarck, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 4, 1978, Ser. No. 930,952
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—292.1 **19 Claims**



1. A boom assembly mountable on a vehicle which comprises;

a boom having inner and outer ends, the boom being pivotally connected to the vehicle about a first axis that is proximal to said inner end, and being movable between upper and lower positions;

first resilient means, having first and second ends, having a first elastic load gradient between said first and second ends, and having said first end connected to said boom, for producing a force that is sufficient to resiliently support said boom proximal to said lower position when said second end is in a first position, and for raising said boom proximal to said upper position in response to movement of said second end to a second position;

second resilient means, having third and fourth ends, having a second elastic load gradient between said ends, having said third end operatively connected to said second end of said first resilient means, and having said fourth end connected to said vehicle, for exerting a resilient force that resiliently urges said boom toward said upper position;

limiting means, being connected to said vehicle, for limiting the movement of said second end in a first direction to said first position; and

forcing means, being operatively connected to said second end of said first resilient means, for selectively applying an actuating force to said second end to move said second end to one of said positions thereof, and for cooperating with said second resilient means to selectively move said boom to either of said positions thereof.

4,221,354

RETRACTABLE HOOK FOR A VEHICLE

Gordon B. Kempkers, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Nov. 22, 1978, Ser. No. 962,890
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—293 **6 Claims**

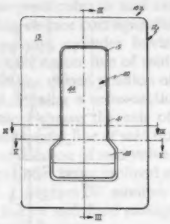
1. A retractable hook for use in a vehicle, said hook comprising:

a housing comprising a rear wall, sidewalls and upper and lower walls joined to define a hook receiving recess, said rear wall integrally defining bias means extending for-

wardly and said sidewall including means spaced from said rear wall for supporting a pivot pin;

a hook member integrally including first and second arms joined at an enlarged portion, said enlarged portion including an aperture extending therethrough for receiving a pivot pin;

a pivot pin pivotally mounting said hook member to said housing; and



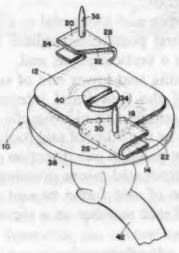
said enlarged portion further including recess means selectively engaged by said bias means for releasably holding said hook member in a flush position with respect to said housing whereby said hook pivots about said pivot pin to an open position with said first end extending from said housing and said second end contacting said housing to hold said hook member in position.

4,221,355

DEVICE FOR SUSPENDING ARTICLES FROM A CEILING OR THE LIKE

James B. Hoop, 8127 E. 12-Apt. 2, Tulsa, Okla. 74112

Filed Jul. 5, 1978, Ser. No. 921,893
Int. Cl.[2] B42F *13/00*
U.S. Cl. 248—340 **1 Claim**



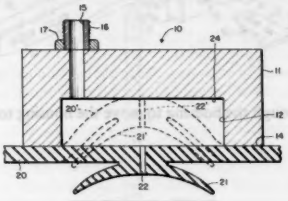
1. A device for facilitating securing of articles to a ceiling and comprising a unitary main body member, flange engaging means provided on the main body member for selective engagement with a ceiling channel member, independent hook means carried by the main body member for receiving the articles to be suspended from the ceiling, connecting means secured to the hook means and extending rotatably through the main body member for rotatably supporting the hook means with respect to the main body member, said flange engaging means comprising oppositely disposed gripping members having one open side for receiving the ceiling channel therein and one closed side for limiting the engagement therebetween, said gripping members comprising a first flange engaging member extending outwardly from said body and the open side thereof providing a hiatus for receiving the channel member therein, a second flange engaging member oppositely disposed from the first flange engaging member and said open side thereof providing a hiatus for receiving the channel member therein, and an independent pin member secured to the outer surface of each flange engaging member and extending perpendicularly outward therefrom for penetrating the ceiling for facilitating retaining of the device in the engaged position with the channel member.

4,221,356

VACUUM OPERATED HOLDING FIXTURE

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

Filed Nov. 9, 1978, Ser. No. 959,014
Int. Cl.[2] A45D *42/14*
U.S. Cl. 248—363 **4 Claims**



1. A vacuum operated holding fixture comprising:

(a) a common carrier;

(b) a plurality of suction assemblies mounted on said carrier;

(c) a common source of vacuum;

(d) said carrier being formed with an individual hollow, outwardly open chamber having a substantially flat roof surface for each of said assemblies;

(e) means for connecting at will all of said chambers to said source and including a closable conduit to each of said chambers;

(f) each of said assemblies including a flexible member extending across the outwardly open portion of its associated chamber and capable of stretching into its associated chamber upon the application of a pressure differential thereacross;

(g) each of said members having an opening therethrough into its associated chamber; and

(h) each of said members having a suction cup provided with an opening for sealing it substantially vacuum tight to a surface, whereby each suction cup will attached itself to a surface upon the application of a vacuum from said source, and whereby said suction cup will normally hold the vacuum and when said suction cup becomes open to the atmosphere, said flexible member will flex inwardly into its associated chamber thereby to seal said openings by pressing against said roof surface of its chamber to operate as an automatic valve.

4,221,357

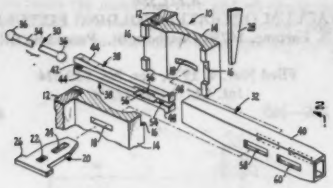
TIE ROD ASSEMBLY FOR CONCRETE FORM PANELS

George F. Bowden, Milford, Mich.; Warren W. Grist, Universal City, and Ramon J. Cook, San Antonio, both of Tex., assignors to The Burke Company, San Mateo, Calif.

Filed Jan. 2, 1979, Ser. No. 346
Int. Cl.[2] E04G *17/08, 11/06*
U.S. Cl. 249—191 **15 Claims**

1. In combination with a concrete form panel having at least one tie rod opening extending therethrough, an improved tie rod assembly for securing said panel in place, said assembly comprising: a tie rod having a head on at least one end thereof; a pair of gripper jaws releasably engaged with the head; a housing extending around the jaws in slidable engagement therewith for movement relative to said jaws from a first position holding said jaws in engagement with said head to a second position releasing said jaws from such engagement, said housing extending longitudinally of the rod and being proportioned for slidable extension in its entirety through the opening in the form panel; locking means extensible transversely through the housing for engagement with the housing and jaws

to positively lock the housing in the first position and secure the housing to the panel; and, release means extensible transversely through the housing to move the housing to the second position.

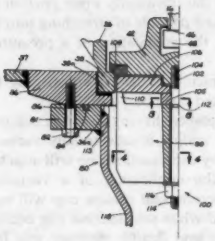


4,221,358

POSITIVE CLAPPER OUTLET VALVE

Glennon L. Basler, and Richard J. Wempe, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 32,996
Int. Cl.³ F16K *31/50, 51/00*
U.S. Cl. 251—144 **5 Claims**



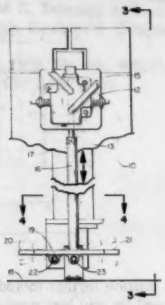
1. A top operated tank car valve assembly comprising: a rod extending downwardly from the top of the tank and attached to a valve stem of a lading valve closure located in the bottom of the tank; a valve guide depending from said valve closure; said valve guide including a center hub and a plurality of vanes extending radially outwardly therefrom and adapted to engage a valve cage as the valve is moved between open and closed positions; said center hub being hollow and adapted to receive a fastener to attach the valve guide to said valve closure; said fastener including a threaded inner end to engage the lower portion of the valve closure; a non-round horizontal plate attached to the fastener which holds a seal retainer in engagement with a seal and the valve closure; an outlet chamber attached to a tank mounting flange with shearable fasteners; a breakage groove provided in said fastener; said breakage groove aligning with the mounting flange and outlet chamber interface; whereby, if the outlet chamber is impacted, the outlet chamber fasteners and valve guide fastener will shear along a common plane and the outlet chamber and valve guide will be separated from the outlet; and whereby the horizontal plate located above the shear plane will maintain the seal retainer and the closure seal in place on the valve seat, and lading will be prevented from escaping from the tank during such impacts.

4,221,359

FOOT CONTROL FOR HYDRAULIC VALVE

Samuel Grimaldo, Thousand Oaks, Calif., assignor to American Machine & Hydraulics Inc., Newbury Park, Calif.

Filed Dec. 8, 1978, Ser. No. 967,573
Int. Cl.³ F16K *31/62*
U.S. Cl. 251—295 **2 Claims**



1. In a machine frame incorporating an hydraulic valve normally provided at its top end with an operating element for operating said valve and wherein the valve is mounted on the frame at a level convenient for manual operation of said element, a foot control for said valve including, in combination:

(a) mounting means for mounting said valve upside down to said frame at said same level so that said element is positioned at the bottom end of said valve;

(b) an elongated member pivoted at its top end to said element and extending vertically downwardly to terminate at its lower end at a spaced distance from the floor;

(c) a transverse foot pedal having foot engaging surfaces at its opposite ends;

(d) means pivoting said foot pedal to a lower portion of said frame at a first point intermediate its ends for rocking movement in a vertical plane; and,

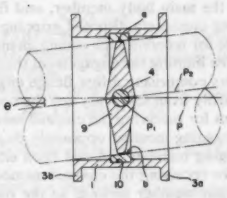
(e) means pivoting said lower end of said member to a second point of the foot pedal intermediate its ends and spaced from said first point, whereby an operator can step on either one or the other of said foot engaging surfaces to rock said foot pedal in one direction or the other without interference from said means pivoting said foot pedal to a lower portion of said frame or said means pivoting said lower end of said member to a second point of the foot pedal.

4,221,360

BUTTERFLY VALVE

Masahiro Yasuoka, Sakai, and Yoshitsugu Okada, Hirakata, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Dec. 19, 1978, Ser. No. 971,146
Claims priority, application Japan, Jan. 27, 1978, 53-8460
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—305 **1 Claim**



1. A butterfly valve comprising, a valve body having a fluid

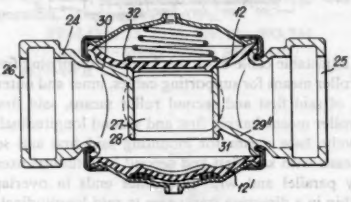
passage, a hard annular body seat in said valve body, a valve disc rotatable about an axis substantially perpendicular to a center line of said fluid passage, a hard annular disc seat of elliptical cross-sectional shape defined on the periphery of said valve disc, said disc seat adapted to contact said hard annular body seat on said valve body over the entire circumference thereof when said valve disc is in a position substantially perpendicular to said center line of said fluid passage, said body seat having a sealing surface of elliptical cross-sectional shape extending in a plane perpendicular to said center line of said fluid passage, said sealing surface corresponding to the peripheral surface of an imaginary cylinder having a center line inclined at an angle to said center line of said fluid passage in the direction of rotation to a closed position of said valve disc, said peripheral surface defining a cross-section in said imaginary cylinder of elliptical shape, the axis of said imaginary cylinder intersecting said center line of said fluid passage at the same point as the axis of rotation of said valve disc, said center line of said imaginary cylinder being inclined at an angle within the range of between 2 degrees 30 minutes to 6 degrees 30 minutes to the center line of said fluid passage.

4,221,361

DIAPHRAGM VALVES

Zvi Weingarten, Post Ashrat, Israel, assignor to Barmad, Post Ashrat, Israel

Filed Feb. 13, 1978, Ser. No. 876,883
Claims priority, application Israel, Jul. 4, 1977, 52446
Int. Cl.[2] F16K *7/16, 7/17*
U.S. Cl. 251—331 **4 Claims**



1. A valve having a body, said body having a passage for liquids extending therethrough; a barrier extending across said passage having a circular opening therethrough; said circular opening forming a valve seat; a flexible diaphragm having a circular center portion and an annular outer portion integral with and surrounding said central portion; means clamping the outer periphery of said outer portion to said body and forming a liquid type seal therewith; the central and outer portions of said diaphragm being of substantially the same thickness and said outer portion being of a shallow dish shape when said valve is closed; A first circular bead on said diaphragm projecting from one face and of a diameter to seat against and within said valve seat; a second circular bead projecting from the opposite face of said diaphragm and of a greater diameter than said first bead; resilient means for applying pressure to said diaphragm within said second bead and urging said diaphragm against said valve seat.

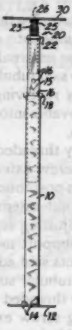
4,221,362

JACK POST

Gordon L. Van Santen, Woodstock, Canada, assignor to Pliotron Corporation of Canada Limited, Ontario, Canada

Filed Sep. 5, 1978, Ser. No. 939,115
Claims priority, application United Kingdom, Sep. 6, 1977, 37203/77
Int. Cl.[3] B66F *3/10*
U.S. Cl. 254—98 **3 Claims**

1. A jack post having inner and outer telescoping tubes, and top and bottom plates, the inner tube having transversely aligned pairs of bores for receiving a cross pin so that the post can be held in extended position with the cross pin so that the post can be held in extended position with the cross pin positioned through one pair of bores and resting on the top of the outer tube, and wherein both said outer and inner tubes are of square cross-section, said plates are substantially flat, are adapted to fit on the jack post in a fixed position generally



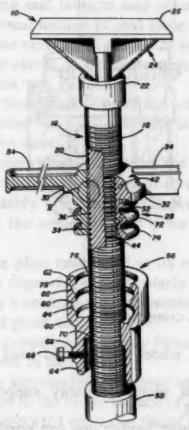
perpendicular to the axis of the tubes, and have a width sufficiently small to allow these to be placed diagonally within the outer tube, said plates being elongated with a length longer than the outer tube width and the combined length of the plates and the inner tube being no greater than substantially the length of the outer tube, whereby a compact package can be made of the entire jack post assembly.

4,221,363

ADJUSTABLE JACK

Allen L. Jasper, Morgantown, W. Va., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Oct. 6, 1978, Ser. No. 949,233
Int. Cl.[2] B66F *3/08*
U.S. Cl. 254—98 **12 Claims**



1. An adjustable jack comprising,
a tubular support member, said tubular support member having a first end portion and a second end portion,
an adjusting screw telescopically positioned in said tubular support member, said adjusting screw having an externally threaded portion,
a nut assembly having a pair of radially movable body portions, said nut assembly body portions each having an

internally threaded portion engagable with said adjusting screw externally threaded portion,

said internally threaded portion of said nut assembly body portions having a thread configuration with an upper surface of each thread having a greater inclination relative to the longitudinal axis of said nut assembly than a lower surface of each thread relative to the longitudinal axis of said nut assembly,

means for moving said internally threaded portions of said nut assembly body portions into and out of engagement with said adjusting screw externally threaded portion,

a retainer means secured to said tubular support member first end portion for rotatably receiving said nut assembly,

said nut assembly being movable into and out of engagement with said retainer means,

said nut assembly internally threaded portion being engagable with said adjusting screw externally threaded portion when said nut assembly is positioned in said retainer means so that rotation of said nut assembly in a first direction rotatably extends said adjusting screw from said first end portion of said tubular support member and in a second direction rotatably retracts said adjusting screw into said first end portion of said tubular support member, and

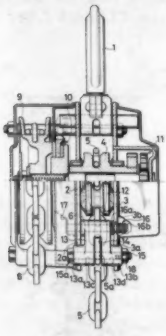
said nut assembly internally threaded portions being disengagable with said adjusting screw externally threaded portion when said nut assembly is removed from said retainer means to permit nonrotational linear extension and retraction of said adjusting screw from and into said first end portion of said tubular support member.

4,221,364

CHAIN BLOCK

Yosaku Nishimura, Osaka, Japan, assignor to Kabushiki Kaisha Toa Kiaki Seisakusho, Osaka, Japan

Filed Aug. 3, 1979, Ser. No. 63,550
Claims priority, application Japan, Aug. 7, 1978, 53-108667
Int. Cl.[2] B66D *1/00*
U.S. Cl. 254—338 **2 Claims**



1. A chain block comprising:

a load chain,

a load sprocket wheel having said load chain entrained therearound,

a pair of lateral plates rotatably supporting said load sprocket wheel,

an attaching member having one end portion thereof interposed between said pair of lateral plates,

a connecting pin extending through the load-free end link of said load chain and through the other end portion of said attaching member,

said attaching member having a slot formed at the other end portion thereof for receiving said load-free end link and also having boss-like projections integrally formed on both sides of said other end portion projecting axially of said connecting pin, the dimension between the end surfaces of said boss-like projections being not smaller than the dimension between the end surfaces of said lateral plates so that when the load chain is lowered to the fullest extent, said projections abut against the peripheral edges of said lateral plates,

an attaching pin extending through said pair of lateral plates and through one end portion of said attaching member to pivotally mount said attaching member,

guide rollers for guiding said load chain,

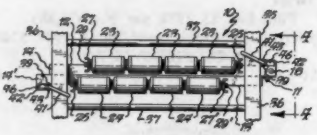
said guide rollers being rotatably supported between said lateral plates.

4,221,365

ADJUSTABLE CABLE DRAW MECHANISM

Joseph H. Brunskole, Rexdale, Canada, assignor to Pilgrim Technical Products Ltd., Mississauga, Canada

Filed Feb. 23, 1979, Ser. No. 14,367
Int. Cl.[3] B66D *1/36*; F16L *3/16*
U.S. Cl. 254—398 **6 Claims**



1. An adjustable cable draw mechanism comprising first and second roller means for supporting cables, inner and outer ends on each of said first and second roller means, said first and second roller means having first and second longitudinal axes, respectively, base means for mounting said first and second roller means with said first and second longitudinal axes substantially parallel and with said inner ends in overlapping relationship in a direction transverse to said longitudinal axes, and adjusting means on said base means for shifting said first and second roller means relative to each other in the direction of said first and second longitudinal axes, respectively, to move said outer ends relative to each other while maintaining an overlapping relationship of said inner ends. itudinal axes, respectively, to move said outer ends relative to each other while maintaining an overlapping relationship of said inner ends.

4,221,366

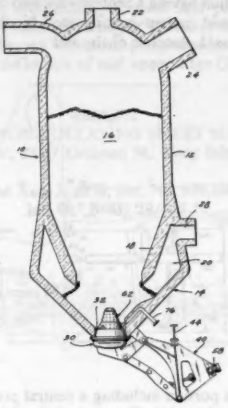
GAS DISTRIBUTING CLOSURE PLUG FOR METALLURGICAL REACTOR

Marco A. F. Verdugo, Monterrey, and Leobardo C. Martinez, San Nicolas de los Garza, both of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 876,362, Feb. 9, 1978, abandoned. This application Jan. 23, 1979, Ser. No. 5,792
Int. Cl.[3] C21B *7/08*
U.S. Cl. 266—197 **18 Claims**

1. Apparatus for the gaseous reduction of metal ores comprising a reactor adapted to contain a bed of particulate ore to be reduced and having a discharge port near the bottom thereof through which reduced metal ore can be discharged and a hollow, substantially frusto-conical, upwardly converging closure plug defining a substantially frusto-conical chamber therein and constructed and arranged to be positioned within and to seal said discharge port, said plug having an inlet

connection for a cooling or heating fluid and a plurality of lateral openings through the frusto-conical wall of said plug



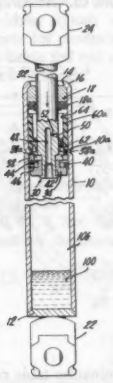
through which said fluid can flow to the interior of said reactor.

4,221,367

GAS SPRING WITH TWO-STAGE DAMPING

Lawther O. Smith, Doylestown, Pa., assignor to Gas Spring Corporation, Montgomeryville, Pa.

Filed Oct. 23, 1978, Ser. No. 953,764
Int. Cl.[2] B60G *11/26*; F16F *3/00*
U.S. Cl. 267—64 R **1 Claim**



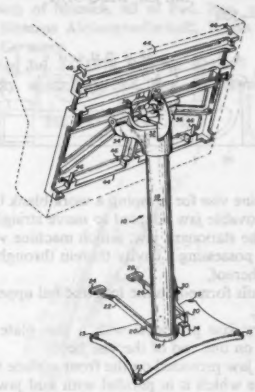
1. In a gas spring which includes a gas-tight cylinder containing a gas under pressure and a body of oil, a piston rod movable through a main seal adjacent one end of the cylinder, a piston on the rod subdividing the cylinder into variable volume tube and rod chambers, and a flow-restricting bypass passage communicating the tube chamber to the rod chamber through an opening at a location on the rod spaced axially from the rod side of the piston, the improvement comprising an annular oil cushion seal adjacent the seal end of the cylinder interposed between the cylinder and rod and spaced axially from the main seal to define with the main seal an oil cushion chamber, and a flow-restricting passage through the oil cushion seal communicating the rod chamber with the oil cushion chamber for permitting controlled flow of gas and oil from the rod chamber to the oil cushion chamber as the rod nears the fully extended position, thus to afford a second damping stage near the end of an operating stroke when the bypass passage opens to the oil cushion chamber and communication from the rod chamber to the tube chamber is via the oil cushion chamber and both flow-restricting passages in series.

4,221,368

ROTATABLE, TILTABLE AND EXPANDABLE UPHOLSTERY WORK TABLE

Chelsey B. Channel, 1506 Ellis Ave., Milpitas, Calif. 95035

Filed Jul. 31, 1978, Ser. No. 929,842
Int. Cl.[3] B25B *1/22*
U.S. Cl. 269—54.3 **10 Claims**



1. A stationary support apparatus for large, bulky work objects comprising:

a base;

means for firmly affixing said base to a stationary surface;

a central support column firmly affixed to said base;

a support table situated at the opposite end of said column from said base;

means for affixing said table to said column and providing for free rotational motion of said table upon said column and nondiscrete vertical tilt motion of said table upon said column to the extent of a predetermined range of angles from horizontal, and including

a yoke which fits over the top of the column and is firmly affixed thereto, said yoke having arms extending upward on two sides;

a horizontal pivot shaft connecting the arms of said yoke and being nonrotatably mounted to said arms;

a saddle rotatably attached to said pivot shaft and centered over the center of said yoke and said support column;

a semicircular plate connected at its ends to said saddle such that it depends perpendicularly to said pivot shaft and having a center segment removed such that it fits around said pivot shaft;

a pivot post extending vertically from the center of the upper surface of said saddle;

a thrust bearing surrounding said post; and

a molded portion of the lower surface of said table such that said table is supported upon said thrust bearing and rotates about said pivot post;

operator-controlled means for normally arresting the rotational movement of said table and firmly holding said table in any desired rotational position;

operator-controlled means for normally arresting the vertical tilt motion of said table at any desired angle within said predetermined range and holding said table in such position;

operator-controlled means for altering the dimensions of

said table to provide for firm attachment of said work object to said table; and

means for grasping said work object and firmly attaching it to said table.

4,221,369

MACHINE VISE

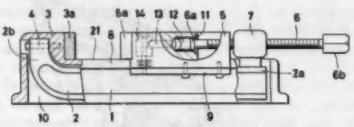
Tamotsu Takasugi, 2307-5 Ibara-cho, Ibara-shi, Okayama-ken, Japan

Filed Nov. 7, 1979, Ser. No. 92,203

Claims priority, application Japan, Jan. 28, 1979, 54/82407

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—138 **5 Claims**



1. A machine vise for grasping a work blank by a stationary jaw and a movable jaw adapted to move straight toward and away from the stationary jaw, which machine vise comprises:

a vise bed possessing a cavity therein throughout the entire length thereof,

a pair of rails formed on the longitudinal upper edges of the vise bed,

a stationary jaw provided with a jaw plate and fixed in position on one end of the vise bed,

a movable jaw provided on the front surface thereof with a jaw plate which is in parallel with said jaw plate of said stationary jaw and provided with guides adapted for intimate engagement with said pair of rails and mounted on said vise bed freely movably toward and away from said stationary jaw,

an L-shaped frame separately disposed throughout in the longitudinal direction of said cavity in said vise bed and possessing one end fastened inwardly to said stationary jaw,

driving means supported in position on the other end of said L-shaped frame and adapted to impart forward or backward movement to said movable jaw,

vertical shafts disposed on the jaw plate side of said movable jaw and retained in position by bolts planted in said guides, and

means disposed inside said movable jaw and adapted to transmit the driving force issuing from said driving means to said movable jaw, with one end of said means connected to said driving means and the other end thereof to said vertical shafts.

4,221,370

OBSTETRIC CHAIR

Michael A. Redwine, Aurora, Nebr., assignor to Century Mfg. Co., Aurora, Nebr.

Filed Mar. 20, 1978, Ser. No. 888,321

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—323 **7 Claims**

1. An obstetric chair comprising:

a seat portion;

a backrest portion having a longitudinal axis;

said longitudinal axis of said seat portion being at a substantial angle to said backrest portion whereby a patient is seated upright in said obstetric chair;

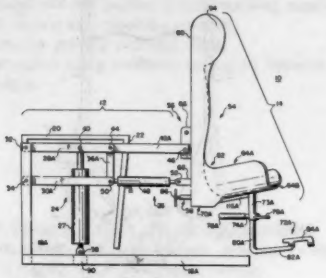
said back rest position being cradle-shaped and curved to form side sections, whereby the torso of said patient is retrained from lateral movement;

means for supporting the thighs of the patient;

said means for supporting the thighs being channel shaped, whereby the thighs of said patient are restrained from lateral movement;

said means for supporting the thighs being above said seat portion, whereby said patient is restrained from forward movement in said seat;

said seat portion having a centrally located cut-away portion whereby said patient is supported by the buttocks and thighs on said obstetric chair; and



said back rest portion including a central portion extending outwardly over said seat portion, whereby upward movement of said patient is restrained.

4,221,371

UROLOGICAL EXAMINATION TABLE

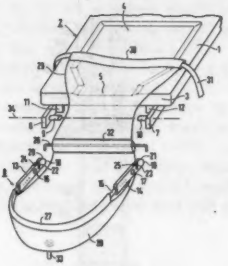
Wilko Kuphal, Rueckersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,362

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758845

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—327 **14 Claims**



1. A urological examination table comprising a patient support platform and comprising a collector-receptacle which can be inserted into two supports at the caudal front side of the patient support platform directly beneath the same, characterized in that the collector receptacle (8) comprises a plastic sack (28) having an elongated upper edge (27) which is flanged in a tubular fashion and which is of a length to extend in a generally semicircular configuration at the region of the plastic sack (28) remote from the patient support platform (1), and a highly flexible band (15) extending on edge, in a substantially horizontal, generally semicircular arch through the flanged upper edge (27) of the plastic sack for supporting the same, said highly flexible band (15) having countersupports (13, 14) secured therewith at opposite lateral sides of the plastic sack (28) for coupling to the supports (6, 7) of the patient support platform (1) such that the elongated upper edge (27) is normally held in said generally semicircular configuration and disposed so as to protrude generally horizontally, said countersupports

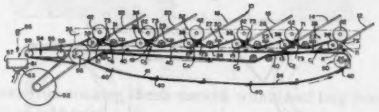
(13, 14) being disposed when coupled with said supports (6, 7) to accommodate laterally inward deflection of said upper edge (27) in a generally horizontal plane in response to engagement with a physician approaching toward said patient support platform, and said band (15) being of sufficient flexibility to be distortable laterally in a horizontal plane to accommodate such laterally inward deflection of said upper edge (27).

4,221,372

MACHINE FOR COLLATING SHEET MATERIAL

Peter H. Foerster, 37-27 Crescent St., Long Island City, N.Y. 11101

Filed Aug. 2, 1978, Ser. No. 930,320
Int. Cl.[2] B65H *39/055*
U.S. Cl. 270—58 21 Claims



16. A control circuit for controlling a machine for collating sheet material which includes a conveyor which moves beneath a plurality of stations, the circuit comprising:

a first plurality of microswitches, each switch of said first plurality being responsive to a sheet leaving a respective stack of sheets;

a second plurality of microswitches, each switch of said second plurality being responsive to a sheet arriving in the vicinity of a station over the moving conveyor;

means for providing signals representative of the position of said moving conveyor with respect to said stations; and

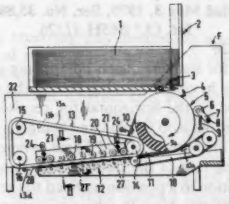
circuit means responsive to output from at least one of said first and said second pluralities of microswitches and from said means for providing signals representative of the position of the conveyor for producing a signal indicative of whether a sheet is being fed too early or too late from its representative stack of sheets.

4,221,373

APPARATUS FOR FOLDING PAPER SHEETS OR THE LIKE

Müller Hans, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Mar. 20, 1978, Ser. No. 888,199
Claims priority, application Switzerland, Mar. 18, 1977, 3412/77
Int. Cl.[2] B65H *45/22*
U.S. Cl. 270—86 6 Claims



1. In an apparatus for folding sheets which consist of paper or the like, the combination of an elongated endless conveyor advancing in a trajectory and having an inner side, an outer side, and two inclined surfaces bounding a substantially V-shaped endless longitudinal groove of a uniform cross section in said outer side and enclosing a substantially constant angle with one another over the entire length of the conveyor; a back support adjacent to a portion of said trajectory at said inner side; means for feeding sheets seriatim to said outer side for joint advancement therewith along said trajectory portion; and means for forcing portions of the sheets to various extents into said groove, including at least two surface sections extending into and tapering toward said groove opposite said back support at an angle which changes along said trajectory portion.

4,221,374

DEVICE FOR MOVING SHEET DATA CARRIERS FROM AND TO STACKS OF SHEETS

Harald Koch, Baierbrunn; Ludolf Haertenberger, and Anton Hanoefner, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,497
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735223
Int. Cl.[2] B65H *5/22*
U.S. Cl. 271—4 7 Claims

1. A paper handling device for typewriters and the like comprising a sheet storage means positionable above a typewriter having a sheet supporting surface at an angle to the horizontal, decision threshold means adjacent a bottom of the storage means and affixed thereto, sheet movement means having a friction surface opposite the supporting surface, means for moving the friction surface relative to a sheet positioned adjacent the storage means to frictionally contact and move the sheet upwardly away from the decision threshold means to a point where a bottom of a sheet is positioned above the decision threshold means, means releasing the friction contact whereby the sheet drops by gravity past the decision threshold means, two paper handling devices being provided positioned above a typewriter with one of the paper handling devices providing a single sheet infeed for said typewriter for supplying sheets one at a time from sheets in the associated sheet storage means and wherein another of the paper handling devices comprises sheet storage means for storing processed sheets exiting from said typewriter, each of said paper handling devices having a sheet movement means associated therewith.

4,221,375

COPY SHEET HANDLING APPARATUS FOR A COPIER

Douglas I. Morrison, Norwalk, and William Gergely, Jr., Monroe, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,008
Int. Cl.[3] B65H *1/08*
U.S. Cl. 271—127 5 Claims

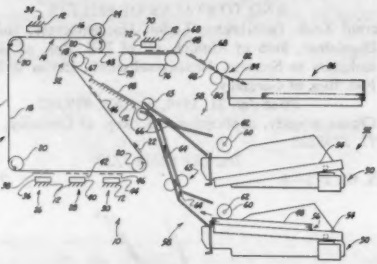
1. In a copier, copy sheet handling apparatus comprising:

a. means for feeding copy sheets, said copy sheet feeding means including a pair of feed rollers spaced apart from each other;

b. means for supplying a copy sheet, said supplying means including a tray on which a copy sheet may be loaded, said tray extending substantially transversely through a plane which extends midway between said feed rollers;

c. means for swivelably supporting said tray;

d. means cooperative with said supporting means for moving said tray, said moving means including means for applying a resilient force to said tray substantially in said plane to move said tray toward said rollers for disposition of a copy sheet into engagement with said rollers whereby said force is substantially equally distributed between said rollers, said force applying means including flexure spring means, said flexure spring means including an elongated flexure spring having a free end adapted for exerting said force against said tray, said tray supporting means including means for holding the other end of said flexure spring stationary; and



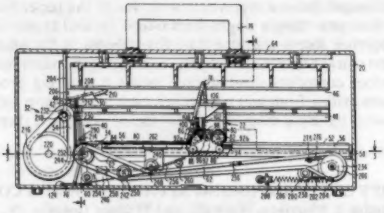
e. said flexure spring holding means including leg means extending from said tray, said holding means including clamping means pivotably attached to said leg means and having a pivot axis, said flexure spring lengthwise extending through said pivot axis, said other end of said flexure spring attached to said clamping means, and said holding means including means for adjustably fixing the position of said clamping means with respect to said pivot axis for changing the energy stored in said flexure spring.

4,221,376

DOCUMENT CARTRIDGE AND MOUNTING APPARATUS

Carl Handen; Don S. Minami, both of Los Gatos, and John D. Treder, Santa Clara, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,001
Int. Cl.³ B65H *1/02, 1/10, 7/04*
U.S. Cl. 271—149 **15 Claims**



5. Apparatus for delivering individual sheets from a stack to a sheet transport, comprising:

cartridge means for storing and transporting a stack of sheets, said cartridge means including drive means for engaging and feeding individual sheets from said stack through an issue port in a wall of said cartridge;

means coupled to said cartridge for actuating said drive means;

sheet denomination indicating means in said cartridge means settable to one of a plurality of selectable positions for indicating the intended denomination of currency stored in said cartridge and to be dispensed therefrom;

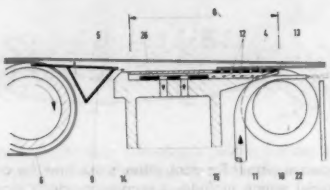
means responsive to said indicating means being set at any except the selected position for preventing said cartridge means from being coupled to said means for actuating.

4,221,377

APPARATUS FOR DECELERATING AND STACKING SHEETS

Jakob Bodewein, Mönchengladbach, and Günter Hector, Ebenau, both of Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,281
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2755160
Int. Cl. B65H *29/68*
U.S. Cl. 271—183 **5 Claims**



1. In a paper sheet feeding apparatus having means for successively conveying flexible sheets of paper at a predetermined speed, means for decelerating the conveyed sheets from the predetermined speed prior to being stacked, the improvement wherein the conveying means includes means for lowering the trailing edge portion of a conveyed sheet with respect to the leading edge portion of the next successive sheet, wherein the decelerating means includes means for applying a suction force on the trailing edge portion of each conveyed sheet in proportion to the predetermined conveying speed to effect an overlap of the trailing edge portion of the decelerated sheet by the relatively higher leading edge portion of the next successive sheet, the suction means comprising an ejector roller disposed directly upstream of the stacking means and having recesses and at least one suction strip in the recesses of the ejector roller and extending approximately to the apex thereof and at least one nozzle in the vicinity of the ejector roller to form an air cushion between the decelerated sheet and the previously stacked sheet.

4,221,378

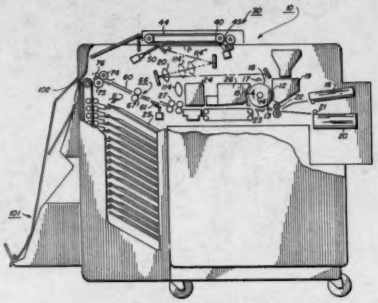
COPY STACKING TRAY WITH RESTRAINING FINGERS

Venkatesh H. Kamath, Fairport; Michael A. Malachowski, Webster, and Charles P. Vorndran, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,880
Int. Cl.³ B65H *31/26*
U.S. Cl. 271—220 **13 Claims**

1. Apparatus for stacking sheets comprising a frame, a vertical stacking tray having a stacking face in the sheet receiving position inclined to the horizontal for receiving sheets, said tray having a bottom stop portion and being pivotally mounted at its bottom to the bottom of said frame, whereby on pivoting open the stacking face of the stacking tray is pivoted through the vertical position to a position inclined to the horizontal and reversed in orientation from the sheet receiving position of the stacking tray, means for advancing sheets into said tray, means for decelerating and stacking sheets entering said tray, said decelerating and stacking means comprising at least one resilient elongated member mounted above the sheet advancing means and having a free end at the bottom of said tray, the improvement wherein said free end of said elongated member and said bottom stop portion of said tray have mutually engagable fastening means whereby upon pivoting said tray said

fastening means of said resilient elongated member and said fastening means of said bottom stop portion are engaged



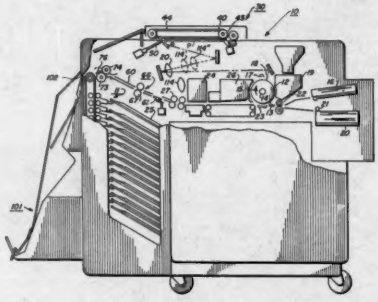
thereby restraining sheets stacked within said tray from falling out of said tray.

4,221,379

COPY STACKING TRAY

Venkatesh H. Kamath, Fairport, and Charles P. Vorndran, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,879
Int. Cl.[3] B65H *39/10*
U.S. Cl. 271—289 **12 Claims**



1. A copy receiving tray comprising a bottom stop portion and a vertical stacking tray inclined to the horizontal for receiving copy sheets up to a first size,

the improvement wherein said vertical stacking tray comprises a first vertical portion extending from said bottom stop portion in a first vertical direction inclined to the horizontal direction a distance at least equal to one half the size of a copy sheet having a first size,

a second vertical portion inclined further to the horizontal than said first vertical portion out of the path of travel of copy sheets, said second vertical portion extending a distance at least equal to one half the size of a copy sheet having a first size,

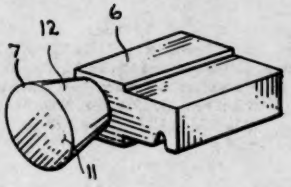
a third vertical portion above said second portion generally inclined to the vertical in about the same plane as said first vertical portion, said third portion providing a stacking support for the top portion of a copy sheet of a size greater than said first size.

4,221,380

SIMULATED VEHICLE RADAR TRANSCEIVER

Jack V. Miller, and Mark R. Miller, both of 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Nov. 20, 1978, Ser. No. 962,213
Int. Cl.[2] A63J *3/00*
U.S. Cl. 272—8 N **4 Claims**



1. A simulated vehicle radar transceiver comprising

a horizontally disposed elongated body having a small end and a large end;

a generally planar surface terminating the large end in a plane normal to the long axis of the body;

a generally parallelopiped projection extending laterally from the side of the elongated body in the horizontal plane and being of sufficient length to be clamped between the top edge of a motor vehicle side window and the top frame of said window;

said parallelopiped projection is provided with a groove along its lower surface which is adapted to receive the top edge of the side window of the motor vehicle and whereby the body is held in the generally horizontal plane clamping said projection between the frame top and the top edge of said window; and

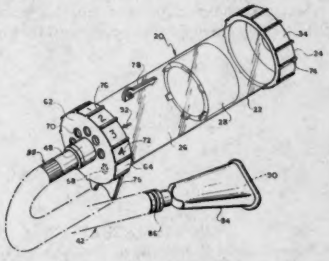
the described structure is molded of a single unitary piece of plastic material.

4,221,381

RESPIRATORY EXERCISER

Richard E. Ericson, Harvard, Mass., assignor to Albany International Corp., Menands, N.Y.

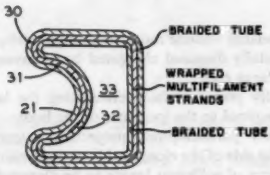
Filed Dec. 26, 1978, Ser. No. 972,778
Int. Cl.[3] A63B *23/00*; A61B *5/08*
U.S. Cl. 272—99 **16 Claims**



1. A respiratory exerciser comprising; a hollow tubular body having at least two openings at one end and an opening at the other end, a piston freely reciprocally slidable in the tubular body, means for allowing said piston to reciprocate in response to fluid pressure caused by patient inhalation and and exhalation, said means including a mouthpiece assembly removably connected to one opening at the one end of the body so that when the patient inhales and exhales the piston will reciprocate accordingly in response to fluid pressure caused by inhalation and exhalation, and adjustment means on the one end to regulate the size of the one other opening in the one end to control

the size of an access opening to atmosphere at the one end as the patient breathes through the mouthpiece assembly.

4,221,382
SPORTS RACKET
Adrianus A. G. Cooper, and Phillip M. Leopold, both of Alliance, Ohio, assignors to Pepsico, Inc., Purchase, N.Y.
Filed Feb. 21, 1978, Ser. No. 879,312
Int. Cl.[2] A63B *49/10*
U.S. Cl. 273—73 F 4 Claims



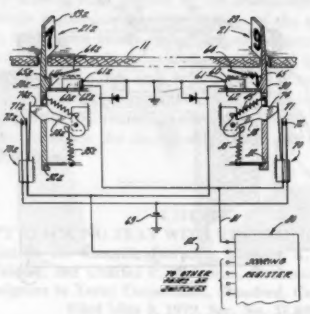
1. An improved one-component composite sports racket frame composed of fibers and resin of the type having a handle portion and an open-faced head portion with a plurality of stringholes to accommodate passage of a stringing strung across the face of the head portion, which is resistant to and retards crack initiation and propagation in the area of the stringholes, consisting essentially of: an inner tubular layer of braided resin impregnated tow, an outer tubular layer of braided resin impregnated tow disposed around the inner tubular layer of braided tow, and an intermediate layer of a resin impregnated tow in the form of a multifilament strand having an overall width of 0.1 inches spirally wrapped over the outside perimeter of the inner braided tube within the inside perimeter of the outer braided tube in the head portion of the racket frame, said intermediate layer having a range of eight to ten circumferential wraps per inch of length of said head portion, said layers of inner braided tube, outer braided tube and spirally wrapped intermediate tow are so constructed and arranged that they are molded into an integral plastic composite.

4,221,383
SPORTS RACKET
Nini P. Cappelli, 8902 Beverly Blvd., Los Angeles, Calif. 90048
Filed Aug. 28, 1978, Ser. No. 937,087
Int. Cl.[3] A63B *49/02*
U.S. Cl. 273—73 C 2 Claims

1. A sports racket comprising:
a head portion having an interlaced string material striking face;
a single handle portion for being gripped by a user; and
a neck portion fixedly integral with and connecting the head and handle portions, wherein said striking face lies in a plane and said handle portion lies in a plane parallel to said striking face and being offset from said striking surface plane a distance within a range of 1¼"–2" along line perpendicular to said striking face, said neck portion slopes at an angle of about 12° relative to said head portion, the length of said head portion is approximately 11";

the length of said handle portion is approximately 7¾"; and the length of said neck portion is approximately 8".

4,221,384
DROP TARGET ASSEMBLY FOR PINBALL GAME
Edward P. Krynski, Downers Grove, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.
Filed Mar. 15, 1979, Ser. No. 20,854
Int. Cl.[3] A63D *3/02*
U.S. Cl. 273—118 D 7 Claims



1. In a pinball game, a play field, means for projecting a ball thereon, a drop target assembly comprising a frame having a set of vertical ways and having provision for mounting below the play field alines with an opening therein, a series of vertical slider, each slider having a target at its upper end and slidable in the ways between (a) and upwardly projecting play position in which the target is above play field level presenting a forward face to the ball and (b) a dropped position, means for biasing each slider to its dropped position, each slider having a latch thereon for latching the slider in play position, a keeper on the frame cooperating with the latch, the ways permitting limited backward and forward movement of each slider, means for biasing at least the upper end of each slider forwardly, reset means for thrusting all of the sliders upwardly to set the latches with all of the targets in play position and so that when one of the targets is subsequently hit by the ball rearwardly during the course of play its latch is released resulting in dropping of the target, each of the sliders having an associated electromagnet

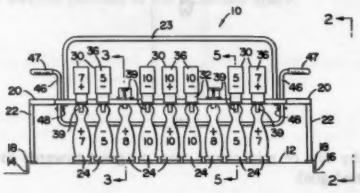
including a movable armature adjacent the latch for releasing the same, a remote ball-actuated device on the play field including switch means, circuitry for connecting the switch means to at least one of the electromagnets so that when the remote device is actuated the switch means is operated energizing the electromagnet for artificially dropping the associated target, and means for registering the dropping of each target.

4,221,385

SHUFFLEBOARD GAME APPARATUS

Robert K. Nidy, P.O. Box 1372, Winter Park, Fla. 32790

Filed Jul. 3, 1978, Ser. No. 921,209
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **16 Claims**



1. Apparatus for playing a game adjacent a flat supporting surface, comprising:

a support member;

means for holding said support member in spaced relation to said supporting surface;

plural target members, each target member being independently and rotatably coupled to said support member, whereby an object moving along said supporting surface causes at least one of said target members to be pivoted with respect to said support member;

plural scoring indicia, each scoring indicia being independently and rotatably coupled to said support member adjacent a corresponding one of said target members;

plural latch means, each latch means coupled with a corresponding one of said scoring indicia to inhibit rotation thereof;

means with each target member for overcoming said latch means to effect rotation of the adjacent one of said scoring indicia responsive to rotation of the corresponding target member; and

a flexible brush mounted on the extremity of each target member and in engagement with said surface.

4,221,386

RING AND LOOP PUZZLE

Rafael Wisniewski, Box 94, Station A, Vancouver, B.C., Canada (V6C 2L8)

Filed May 1, 1978, Ser. No. 901,701
Int. Cl.² A63F *9/08*
U.S. Cl. 273—159 **6 Claims**

6. A ring and loop puzzle comprising:

a neck annulus,

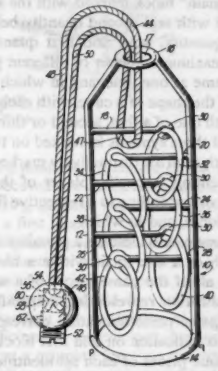
a pair of substantially parallel depending columns fixed to and extending from circumferentially spaced portions of the neck annulus,

a first post or first set of two mutually spaced posts extending from the first of said columns, in the direction of the second of said columns, the end of the said first post or ends of said first set of two posts spaced from the second column,

a second post extending from the second of said columns, in the direction of the first of said columns and spaced apart therefrom and having the first post or one post of the first set of two posts extending from the first of said columns interposed between said second post and the said neck annulus, the end of said second post spaced from the first column, and

(a) in the case where there is only one post extending from the first of said columns it is provided with a connected ring which encircles the post extending from the second of said columns;

(b) in the case where there are two posts extending from the first of said columns, said second post is interposed between the posts of said first set of two posts, said one post nearest the annulus and said second post each being provided with connected rings, the rings of said one post encircling the other post extending from the first of



said columns and said second post, the latter at a point nearer the second column than the point of connection of the ring connected to said second post, the former nearer the first column than the point of connection of the ring connected to said other post, and the ring of said second post encircling said other post, at a point nearer said first column than the point of connection of the ring connected to said other post,

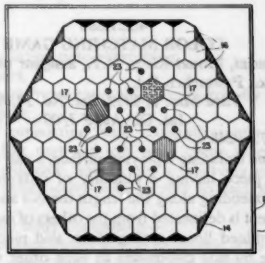
said puzzle additionally comprising a flexible closed loop line having a length sufficient to permit passage of the doubled line through the neck annulus and all of the rings.

4,221,387

GAME BOARD APPARATUS FOR GAME OF STRATEGY AND CHANCE

Danny L. Carter, 24 W. 700 South, Pleasant Grove, Utah 84062

Filed Jun. 27, 1978, Ser. No. 919,735
Int. Cl.² A63F *3/00*
U.S. Cl. 273—236 **2 Claims**



1. Board game apparatus for play by a plurality of players, comprising

a game board,

a first quantity of dice, and

a first quantity of sets of game pieces, in which

the game board is divided into a plurality of blocks of similar size and shape with a first quantity of first blocks that are spaced apart from each other, each individually distinctively marked with a different first indication so as to each represent the indication of a "initial domain" block of a specific player of the game, and with

a second quantity of second blocks each distinctively marked with a second indication so as to each represent the indication of "initial territory" of a specific player, such that each "initial territory" block is adjacent to an "initial domain" block marked with the same player indication, and with said second quantity being a multiple of said first quantity, with said first quantity being set to equal the maximum number of different players that may play the game as one time, and in which

each die is of the shape of a cube, with each face of the cube marked with one of a first, second or third symbol so that each of said three symbols is marked on two faces of each die, and with each die distinctively marked with an indication representing a specific player of the game said die indication corresponding to a respective first indication on said first blocks, and in which

each set of game pieces includes a plurality of four groups of pieces, each of a size to fit within a block of the game board, and all of the game pieces of a set being marked with an indication representing a specific player of the game said game piece indication corresponding to a respective first indication on said first blocks, and with one group of game pieces of each set identified as a group of "fort" pieces, and with each of the game pieces of each group identified by markings of a said symbol so that a complete set includes a group of "fort" pieces and three different groups of game pieces identified as "colony" pieces of said specific player said three groups of "colony" pieces each having thereon one of a first, second or third type of symbol corresponding to a respective one of said first, second or third symbols on said die,

such that the opposing players may place their "colony" pieces and "fort" pieces on the board, capture the "colony" pieces and "fort" pieces of their opponents and replace the captured pieces by their "fort" pieces, in accordance with throw of the dice and the rules of the game, with the object of each player being to place all of his "fort" pieces on the game board to win the game, and with each throw of the dice resulting in the indication of one of the three different groups of colony pieces.

4,221,388

COLOR MATCHING GAME

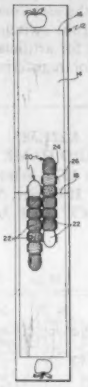
Edward Carini, Mount Kisco, N.Y., assignor to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Mar. 5, 1979, Ser. No. 17,698

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—248 **9 Claims**

1. A game including a playing surface, a pair of game pieces, each said piece having a plurality of differently delineated segments extending along the length thereof and wherein each such segment is delineated from the others of each said piece in a predetermined linear arrangement, said pieces adapted for lateral side by side disposition to each other while facing in opposite directions on said playing surface, said playing surface having a goal at at least one end thereof, and means for selecting a particular delineation such that the similarly delineated segments of said pair of pieces are laterally positioned adjacent each other by the longitudinal movement of one of said pieces relative to the other and said playing surface



whereby one of said pieces may progress towards or away from said goal.

4,221,389

WAR GAME APPARATUS

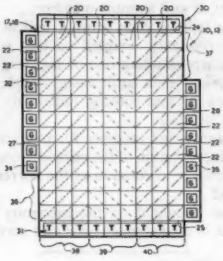
Anthony M. Read, 3890 Hudson St., Vancouver, B. C., Canada (V6H 3A8)

Filed May 8, 1978, Ser. No. 903,577

Claims priority, application United Kingdom, Jun. 10, 1977, 24350/77

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—262 **6 Claims**



4. A game apparatus having a plurality of game pieces and a game board, the board representing a battle area divided into a plurality of spaces to receive the game pieces, the game pieces being further characterized by:

(a) a plurality of mobile weapon pieces identified as belonging to each player and adapted for generally longitudinal movement of the board,

(b) a plurality of interchangeable weapon pieces, each interchangeable weapon piece having a coloured portion to represent range of that particular interchangeable weapon, colour of the coloured portion corresponding to particular spaces on the board and being marked on the game piece in such a location as to be easily hidden from an opponent when required,

the game board being further characterized by:

(c) a first pair of oppositely disposed margins, each margin having a respective plurality of spaces adjacent thereto which represent bases,

(d) a second pair of margins disposed in parallel columns adjacent remaining opposite margins of the board, each

margin having a respective plurality of spaces adjacent thereto which represent interchangeable weapon positions, the second pair of margins being disposed generally laterally of the longitudinal movement of the mobile weapon pieces,

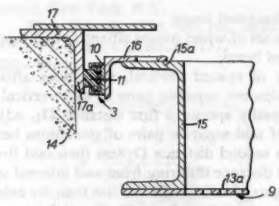
(e) a plurality of the spaces of the board being identified by colour as being within range of a particular type of interchangeable weapon piece, such spaces being arranged in differently coloured groups disposed parallel to the margins of the board adjacent the spaces representing the interchangeable weapon positions, so that each space in a particular group of one colour is within range of a particular type of interchangeable weapon having the same coloured portion, the range of a particular interchangeable weapon being measured generally laterally from a particular weapon position to the particular space.

4,221,390

CONTACT SEAL

George E. Bainbridge, Colchester, England, assignor to Hawker Siddeley Brackett Limited, Hythe, England

Filed Aug. 10, 1978, Ser. No. 932,697
Claims priority, application United Kingdom, Aug. 19, 1977, 34883/77
Int. Cl.[2] F16J *15/34*; B01D *33/02*
U.S. Cl. 277—12 9 Claims



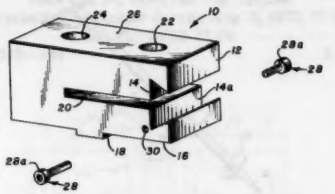
1. Apparatus for screening contaminated liquids, which comprises a screen housing, a screening portion, which screening portion is movable along a predetermined path with respect to the screen housing, a member having a contact surface and fixed to one of the screen housing and the screening portion and sealing means for forming a seal with the contact surface and fixed to the other of the screen housing and the screening portion, the sealing means comprising a seal housing, the seal housing having a first wall, which first wall has an aperture therein, a second wall opposite the first wall, and two opposed side walls joining the first and second walls, a sealing member, which sealing member is movable towards and away from the second wall and has a first portion and a second portion, the first portion being within the seal housing and being wider than the aperture to maintain the first portion captive in the housing, and the second portion projecting through the aperture for contacting the contact surface, and a body of resilient material, the body of resilient material being interposed between the second wall and the first portion of the sealing member and contacting the side walls, movement of the sealing member towards the second wall compressing the resilient material and the resilient material, when compressed, tending to urge the sealing member away from the second wall.

4,221,391

MULTIPLE SEGMENTED CHUCK JAW

Anthony E. Dutton, 2C Queens Terrace, Queen St., Southington, Conn. 06489

Continuation of Ser. No. 820,577, Aug. 1, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 957,858
Int. Cl.[3] B23B *31/00*
U.S. Cl. 279—123 21 Claims



1. A master for a multiple segmented chuck jaw, the master capable of being secured to a chuck and capable of cooperation with an insert having dovetail means, the master comprising:

a body having a first face;

dovetail means formed in said first face adapted for cooperation with the insert for joining said master and said insert together in secured relation to each other;

a slot formed in the base of said dovetail means of said body, said slot extending longitudinally of said master for a distance sufficient to permit said dovetail means to be flexed to exert a gripping force on the insert; and

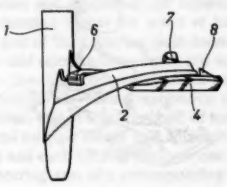
means for simultaneously securing said body to the chuck and flexing the dovetail means on said master to exert the gripping force on said insert.

4,221,392

DISK FOR A SKIING POLE

Yrjo Ahö, Westend, Finland, assignor to Exel Oy, Helsinki, Finland

Filed Oct. 3, 1978, Ser. No. 948,320
Claims priority, application Finland, Oct. 3, 1977, 772908
Int. Cl.[2] A63C *11/24*
U.S. Cl. 280—824 7 Claims



1. A disk for a skiing pole comprising;

a sleeve-like part;

a peripheral main frame extending asymmetrically from said sleeve-like part;

a plurality of supporting lands integrally interconnecting said sleeve-like part and said main frame whereby said lands and said main frame form a relatively rigid body located asymmetrically with respect to said sleeve-like part;

and an auxiliary body comprising—

a plurality of attachment prongs engagable with said rigid body for removably attaching said auxiliary body to said rigid body,

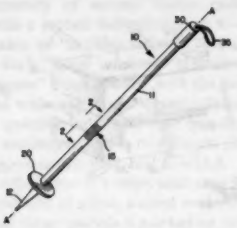
and an auxiliary frame portion at least partially laterally offset from said main frame when said prongs are so engaged for enlarging the bearing area of said disk.

4,221,393

SKI POLE AND SNOW SCRAPER

Arnold Donahue, 2302 N. 11th St., Apt. 302, Arlington, Va. 22201

Filed Feb. 9, 1979, Ser. No. 11,044
Int. Cl.³ A63C 11/18
U.S. Cl. 280—813 4 Claims



1. An improved ski pole construction for use with a ski boot wherein;

the ski pole comprises the following elements; a handle, a shaft member and tapered point,

an integral recessed snow scraper member formed on the ski pole, and

the recessed snow scraper comprises a plurality of parallel pointed elongated scraping surfaces recessed within the circumference of the ski pole,

wherein the length of the elongated recess will accommodate the width of a ski boot.

4,221,394

SNOW VEHICLE

James R. Campbell, Orange, Calif., assignor to Richard E. Gerardi, Huntington Beach, Calif.

Filed Sep. 18, 1978, Ser. No. 943,562
Int. Cl.² A63C 17/18
U.S. Cl. 280—12 H 14 Claims

1. In a vehicle for supporting a rider in a generally upright position for traveling in snow or the like, the combination comprising:

a member configured for supporting a rider in a generally upright position, said member being generally elongate and having a longitudinal center line;

first and second truck members mounted on the under surface of said rider supporting member along said longitudinal center line, each of said truck members being substantially identical and having a stationary portion and a steering member pivotable relative to said stationary portion;

a first ski member secured to the steering member of said first truck member;

a second ski member secured to the steering member of said second truck member, said first and second ski members being generally broadly dimensioned for distributing the weight of the rider over a relatively broad area tilting of the plane of said rider supporting member relative to the surface engaged by said first and second ski members pivoting said first and second ski members relative to each other whereby to provide steering, and

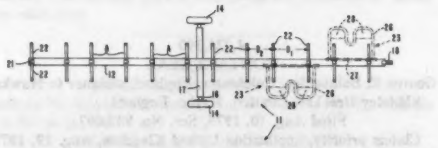
said rider supporting member is an elongate generally board-like member and includes strap means secured thereto on the longitudinal center line thereof for defining first and second foot receiving openings, wherein said strap means is a generally flexible elongate strap member having a first end secured to one end of said board-like member, said board member is provided with first and second parallel slots extending generally transverse to the longitudinal center line thereof for passage therethrough of said strap member, the other end of said strap member being secured to the other end of said board-like member.

4,221,395

HURDLE HAULER

James Carte, 3901 Grandview Ave., Shadyside, Ohio 43947

Filed Nov. 24, 1978, Ser. No. 963,351
Int. Cl.² B60P 3/00
U.S. Cl. 280—79.3 11 Claims



1. In a wheeled hauler arranged for the transport of track hurdles formed of vertical uprights spaced an internal width W_I and a cross bar affixed thereto having an external width W_E,

a single, elongated beam;

at least one set of wheel means affixed to and supporting said elongated beam;

a plurality of spaced vertical, stanchions affixed to said beam, adjacent, separate pairs of said vertical stanchions being equally spaced a first distance D_1, adjacent stanchions of said separate pairs of stanchions being equally spaced a second distance D_2 less than said first distance, said first distance differing from said internal width W_I of the uprights of said hurdle and less than the external width W_E of the cross bar of said hurdles to be transported;

oppositely disposed, angularly and upwardly extending arms affixed to each of said vertical stanchions, said arms extending transversely of said elongated beam, said arms on said adjacent, separate pairs of vertical stanchions being arranged to support said cross bar of said hurdle at two points, one or more of said hurdles being supported on opposite sides of a pair of said vertical stanchions.

4,221,396

WHEEL CHAIR RESTRAINT

Norman J. Kehl, Elk Grove Village, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Apr. 13, 1979, Ser. No. 29,628
Int. Cl.² B60P 7/00
U.S. Cl. 280—1 6 Claims

1. A wheel restraint comprising:

a bracket incuding a pair of spaced arms and comprising means for receiving a wheel between said arms;

a pair of jaw means;

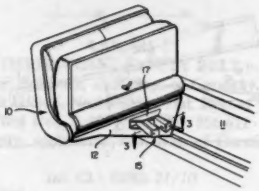
means mounting said pair of jaw means on said bracket, between said arms, for pivotal movement between (1) an open position in which said wheel is free to move into or out of a received position between said arms and (2) a closed position in which said wheel is restrained from moving into or out of said received position;

means normally urging said pair of jaw means toward said open position;

a latch element;

means mounting said latch element on said bracket for movement between a first position, for latching said pair of jaw means when the latter is in said closed position thereof, and an unlatching second position;

means on said pair of jaw means for maintaining said latch element in its unlatching second position when the jaw means is in the open position thereof;



means for urging said latch element to its first position in response to movement of said pair of jaw means from said open to said closed position;

jaw closing means, responsive to a wheel moving into said received position thereof, for moving said pair of jaw means from the open to the closed position;

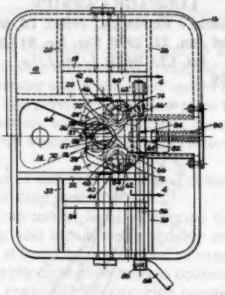
and manually operable means connected to said latch element for moving said latch element from its latching first position to its unlatching second position.

4,221,397

TRAILER HITCH HEAD HAVING JAWS WHICH BEAR ALL OF THE KINGPIN WEAR

Jan D. Holt, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,262
Int. Cl.³ B62D *53/12*
U.S. Cl. 280—436 **9 Claims**



1. A trailer hitch head comprising:

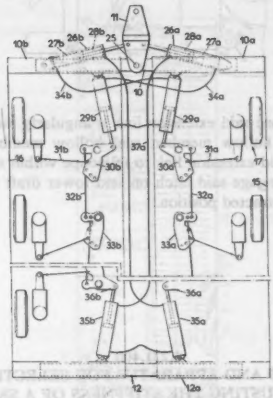
a top plate having a kingpin gathering opening; a bottom plate vertically spaced below said top plate; a pair of jaw pins extending vertically between said top plate and said bottom plate; a pair of jaws rotatably mounted surrounding said pins; said jaws having a pair of semi-circular openings located below said top plate opening; said jaws being pivotably between a closed position adapted to engage a highway trailer kingpin and an open position allowing said kingpin to exit; a pair of torsion springs attached to each of said jaw pins which bias said jaws to open position; each of said torsion srings held in place by a torsion spring mounting bracket; each of said torsion springs having a first end attached to an adjacent jaw pin and a second end attached to said torsion spring mounting bracket and wherein said mounting bracket is rotated to a position to tighten said torsion spring.

4,221,398

HIGHWAY TRAILER OF SELECTIVELY VARIABLE WIDTH

Jean-Claude Pautrat, Champs sur Yonne, France, assignor to J. B. Nicolas France S.A., France

Filed Jul. 20, 1978, Ser. No. 926,248
Claims priority, application France, Aug. 2, 1977, 77 23809
Int. Cl.² B62D *13/04*
U.S. Cl. 280—444 **9 Claims**



1. A highway trailer of selectively variable width, having: two side structures each having at least one longitudinal row of axles provided with ground contacting wheels; transverse means connecting said side structures, enabling movement of said side structures in the direction transverse to the direction of movement of the trailer and including a steering cross-beam; motor means for moving the side structures between an inner position corresponding to minimum width and track of the trailer and an outer position corresponding to maximum width and track; a hitching member rotatably connected to said transverse means and adapted to be connected to a driving vehicle; and steering means for some at least of said axles, comprising a pair of fluid steering jacks located symmetrically each between said steering cross-beam and said hitching member, whereby the fluid compartments of said jacks are subjected to variations in volume responsive to rotation of the hitching member, and at least one pair of auxiliary fluid jacks each connected by pipe means to a corresponding one of said steering jacks and each located between one of said side structures and a steering arm of a corresponding one of said axles.

4,221,399

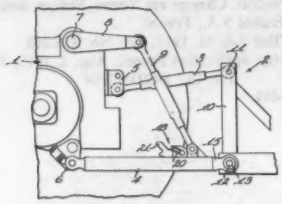
DRAFT ARM EXTENSION STOP

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 17, 1978, Ser. No. 961,623
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—478 R **10 Claims**

1. An extendible lower draft arm of a three-point hitch on a tractor comprising, a hollow member adapted for universal connection to a tractor, an extension link slidably mounted in said hollow member, hook means formed on the forward end of said extension link, a latch on said hollow member for engaging said hook means when said draft arm is in the contracted position, an abutment formed on the inner portion of said hollow member axially aligned with said latch for engaging said hook means in an extended position of said lower draft

arm, said extension link defining a sufficient thickness to hold said hook means in an engaging position with said latch when said extension link is in the contracted position of said hollow member, relief means on said hook means permitting insertion of said extension link in said hollow member by clearing said



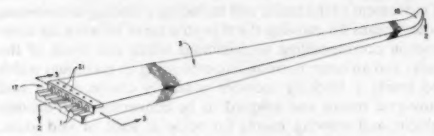
abutment when said extension link is angularly inclined relative to said hollow member, said hollow member thereby permitting said extension link to telescope within said hollow member to engage said latch on said lower draft arm in the normally contracted position.

4,221,400

METHOD AND APPARATUS FOR SELECTIVELY ADJUSTING THE STIFFNESS OF A SKI

John T. Powers, Box 2573, Aspen, Colo. 81611

Filed Nov. 8, 1978, Ser. No. 958,933
Int. Cl.³ A63C *5/07*
U.S. Cl. 280—602 **10 Claims**



1. In a flexible body such as a ski having at least one bore with a substantially circular cross section extending substantially therethrough, the improvement including:

means for adjusting the stiffness of said ski, said adjusting means including at least one prestressed, curved rod member received within said at least one bore, said rod member having a substantially circular cross section and a longitudinal axis and being rotatably received within said bore whereby the stiffness of said ski can be selectively adjusted by rotating the rod member within said bore about said longitudinal axis to any one of a number of rotational positions and,

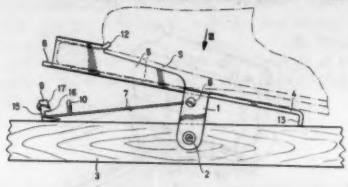
means for indicating the rotational position of said rod member within said bore, said indicating means including a series of slots, each of said slots extending interiorly of said ski into fluid communication with said bore, said indicating means further including a series of markings on said rod member, said series of slots and said series of markings intersecting whereby at least one of said slots and at least one of said markings align as said rod member is rotated within said bore to indicate the rotational position of said rod member within said bore.

4,221,401

CROSS-COUNTRY-SKI BINDING WITH AUTOMATIC LOCKING

Fritz Stölzle, Johann Clanze-Strasse 91, 8 München 70, and Heinrich Cmiel, Preziosa-Strasse 51, 8 München 81, both of Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,335
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—615 **4 Claims**



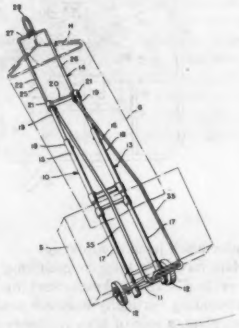
1. A cross-country ski binding having a sole plate securable to the ski, locking pins projecting upwardly from the sole plate for engaging the front margin of the sole of a ski boot, and a means for fixing the sole margin on the locking pins comprising: lateral mounting flanges (1) provided on the sole plate (4) and having downwardly bent side portions positionable on opposite side edges of a ski, said side portions having coaxial bearing holes formed therein for receiving a bearing pin connecting said mounting flanges to the ski, said means for fixing including holding elements which come into engagement with the upper face of the margin of the sole, a holding plate (7) carrying said locking pins (10) which is pivotally connected to said sole plate beneath the same, apertures (14) provided in the sole plate and enabling said pins to pass therethrough, and locking means (9) provided on the front part of the holding plate (7) for connection with the sole plate (4).

4,221,402

GARMENT BAG ATTACHMENT FOR PORTABLE LUGGAGE CARRIER

Eugene A. Kazmark, 5 Remin La., Joliet, Ill. 60433

Filed Jun. 21, 1978, Ser. No. 917,527
Int. Cl.² B62B *1/26, 1/14*
U.S. Cl. 280—659 **5 Claims**



1. A garment bag attachment for a portable luggage carrier, the luggage carrier including a base and a handle assembly including a pair of parallel spaced-apart handle members extending upwardly from the base, the garment bag attachment comprising a frame having a general inverted U shape and including a pair of parallel side rod portions extending upwardly from the handle assembly and a cross rod portion extending between the upper ends of the side rods portions, and a loop portion on the cross rod portions providing an

opening through which the hanger of a garment bag can be inserted, and a pair of mounting members secured to the handle assembly at spaced-apart locations, each mounting member having a groove extending parallel to one of the side rod portions of the frame and receiving and supporting the side rod portions and an opening extending through the mounting member perpendicular to the groove, each of the side rod portions including an end portion which extends perpendicularly to the remainder of the side rod portion and which is inserted through the opening in the associated mounting member.

4,221,403

THREE-POINT SAFETY BELT

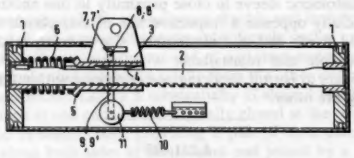
Werner Grosser, Sulzbach, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 2, 1977, Ser. No. 856,611

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655491

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—806 **3 Claims**



1. An automobile having a body, a door abutting a door arrester, a door arrester, and a three-point seat belt, which three-point seat belt comprises:

A. a two-piece pelvis belt comprising a first piece and a second piece each of which in turn comprise a first end and a second end, the second ends of each piece being secured to said car, the first ends of each piece being interconnectable by clasp means with one another, which clasp means comprises an insertion member and a receiving member;

B. a diagonal belt connected at one end to an automatic winder which in turn is connected to said car in the region of said door arrester and at the other end to a first end of a first piece of said pelvis belt, said first piece bearing at its first end an insertion member of a clasp, the second piece of said pelvis belt bearing at its first end a receiving member of a clasp;

C. the second end of said first piece being connected to said car via a pelvis strap mount;

D. said pelvis strap mount being connected to a first prestressed spring, said mount being slidably mounted on a rod having on at least one side thereof an engaging means, said mount having connected thereto cooperating engaging means for engaging said engaging means on said rod when said mount is urged in the travel direction of said automobile, said mount mounted against a release mechanism responsive to a threshhold deceleration whereby when the threshhold deceleration is exceeded said release mechanism releases and said mount slides on said rod.

4,221,404

MEDICAL HISTORY RECORD FILING SYSTEM

Richard M. Shuffstall, Kirkwood Place, Rudolph, Wis. 54475

Filed Jun. 12, 1978, Ser. No. 914,843

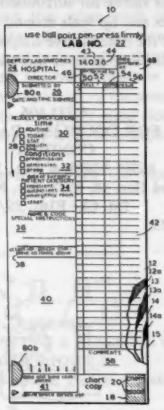
Int. Cl.[3] G09F *11/30*

U.S. Cl. 283—1 A **12 Claims**

1. A medical history record filing system comprising:

a plurality of medical record sets, each of said medical record sets comprising a plurality of separable portions with at least one of the separable portions having color coded means for indicating the type of medical test to be performed and recorded, said color coded portions of different medical record sets being color coded with different colors for different types of medical tests, the separable portions of said plurality of said medical record sets being divided to form one portion with provisions for indicating the type of tests and another portion with the provisions for reporting on the results of the tests;

a plurality of means for holding medical test records, said plurality of means for holding medical test records having color coded means corresponding to the various colors of the color coded separable portions, said plurality of means



for holding medical test records having means for locating a plurality of same color coded portions of said medical test sets to cover up non-essential information, at least some of said plurality of means for holding medical test records having means for arranging a plurality of same color coded portions of said medical record sets in chronological sequence;

attachment means for attaching the color coded separable portions of said medical record sets to said plurality of means for holding medical test records; and detachable specimen labeling means associated with at least one of said medical record sets.

4,221,405

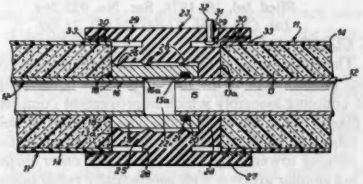
CONDUIT SYSTEM WITH EXPANSION COUPLING AND COMBINED SPACER AND SEALING SLEEVE

Lawrence J. Stonitsch, 2338 Carnation Dr., Joliet, Ill. 60435, and Richard W. Stonitsch, Rte. 1, Mound Rd., Joliet, Ill. 60436

Continuation-in-part of Ser. No. 704,332, Jul. 12, 1976, Pat. No. 4,084,842. This application Mar. 8, 1978, Ser. No. 884,581

Int. Cl.[2] F16L *11/12*

U.S. Cl. 285—53 **3 Claims**



1. A unitary member for insulating, spacing, and sealing expansion couplings between adjacent ends of insulated jack-

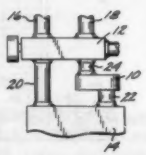
eted tubing which comprises a sleeve member of resilient material having an inner sleeve portion with a reduced diameter bore at one end adapted for directly seating on the tubing of a conduit unit and an enlarged recess for freely surrounding a coupling on the tubing, said reduced diameter bore end portion of the inner sleeve adapted to be squeezed between the coupling and the adjacent insulation of a conduit unit, an outer sleeve surrounding the inner sleeve in spaced relation therefrom and projecting beyond the ends of the inner sleeve, a central body portion uniting the inner and outer sleeves accommodating squeezing of the inner sleeve relative to the outer sleeve, said outer sleeve having open ends projecting beyond the inner sleeve for surrounding the jackets of adjoining conduit units and lip seals around the inner peripheries of the open ends of the outer sleeve adapted to be deflected by the jackets into sealed engagement therewith.

4,221,406

ADAPTER FOR COUPLING PASSAGEWAY AND CONDUIT

Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Dec. 18, 1978, Ser. No. 970,631
Int. Cl.[2] F16L *39/00*
U.S. Cl. 285—119 **10 Claims**



1. An adapter for coupling a passageway and a conduit having off-center longitudinal centerlines, said adapter comprising a casing having an elongated internal chamber defined by a pair of end walls, a pair of side walls, and upper and lower walls, said upper wall including a first opening into said chamber adjacent one of said end walls and adapted for fluid communication with said passageway, certain of said lower and side walls including integral rail means extending between said end walls and projecting into said chamber, said lower wall including a second opening into said chamber defined by the circular margins of a drilled passage through said lower wall and also by confronting arcuate ledges formed in said rail means by extension of said drilled passage partially into said rail means whereby said circular margins are adapted for circumferential association with said conduit, and said arcuate ledges are adapted to engage opposite circumferential portions of the end of said conduit.

4,221,407

COUPLING ASSEMBLY FOR PLASTIC TUBING

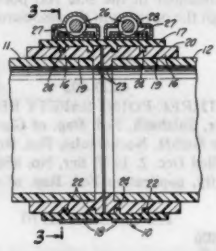
Wayne D. Steimle, 8808 Las Tunas Dr., San Gabriel, Calif. 91766

Filed Jul. 10, 1978, Ser. No. 923,244
Int. Cl.[2] F16L *21/00, 23/00, 25/00*
U.S. Cl. 285—236 **1 Claim**

1. That improvement in aligned adjacent sections of plastic tubing interconnecting installed appliances comprising a separable coupling assembly which improvement comprises:

a plastic collar for each of the adjacent ends of said plastic tubing sections having the inner and outer surfaces converging toward one end thereof, said outer surfaces having annular grooves with substantially radial sidewalls and said inner surfaces being sized to have an interference telescopic fit substantially throughout the length thereof with a respective one of said tubing sections and solvent bonded thereto with said collars in axial alignment and with larger ends thereof closely adjacent one another;

a flexible elastomeric gasket sleeve bridging and snugly embracing the outer oppositely tapering surfaces of said plastic collars and having inwardly projecting annular ribs having radial sidewalls complemental to and snugly seated in said grooves; and



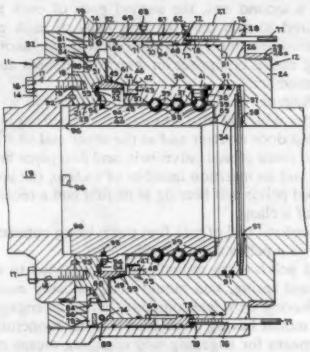
a pair of adjustable and contractable bands encircling said elastomeric sleeve in close proximity to one another and radially opposite a respective one of said plastic collars, said bands and said elastomeric sleeve being readily removable and reinstallable with respect to said plastic collars to permit servicing one appliance without disturbing the other.

4,221,408

PIPE SWIVEL JOINT WITH OPTIONAL STATIC SEAL

Glen E. Lochte, and Charles E. Horn, both of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed May 24, 1978, Ser. No. 909,236
Int. Cl.[2] F16L *27/00*
U.S. Cl. 285—276 **20 Claims**



1. A swivel joint having a fluid flow path therethrough, comprising a butt flange assembly having an axis aligned with the fluid flow path, a clamp hub included in said butt flange assembly, a connector body having an axis aligned with the fluid flow path, means disposed between said butt flange assembly and said connector body for preventing axial separation and for providing swiveling motion therebetween, means for retaining said last named means in substantially fixed axial position relative to said connector body for axial separating force therebetween and for allowing axial displacement for axial converging force therebetween, means for providing a dynamic seal between the fluid flow path and the outside of the swivel joint during swiveling motion between said connector body and said butt flange assembly, and a static seal mounted on said butt flange assembly axially spaced from said connector body, so that axial converging force applied between said

clamp hub and said connector body seats said static seal against said connector body, whereby said connector body is locked rotationally with said butt flange assembly and fluid flow between the fluid flow path and the outside of the swivel joint is blocked.

4,221,409

TAMPERPROOF SHACKLE SEALS

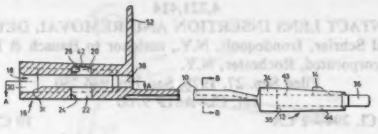
David N. Harley, Bournemouth, England, assignor to ITW Limited, Windsor, England

Filed Oct. 26, 1978, Ser. No. 955,077

Claims priority, application United Kingdom, Nov. 1, 1977, 45357/77

Int. Cl.[2] B65D *55/06, 27/30, 33/34*

U.S. Cl. 292—322 **7 Claims**



1. A one-piece plastic tamperproof shackle seal including an elongated strap, a generally rectangular female socket extending axially outwardly form one end of said strap and a complimentary male plug extending axially from the other end of said strap, said socket having a substantially H-shaped blind bore that is open at one end and substantially closed at the opposite end, said H-shaped bore providing a pair of slots extending axially along both sides of said socket and joined by a transverse slot, said bore adjacent said open end having an enlarged countersunk mouth terminating in shoulder means spaced from said open end, axially extending guide means opening into said transverse slot, recess shoulder means open at one end and communicating with said transverse slot and axially spaced from said open end a distance greater than the axial extent of said guide means, said male plug having a generally H-shaped cross-section complimentary to and acceptable within said socket bore and including a transverse bar carrying axially extending flanges along opposite edges that extend both above and below said bar, said flanges substantially filling said pair of slots, barb means extending up from said bar and having shoulder means that cooperate with said recess shoulder means, said transverse bar carrying a complimentary enlarged portion including guide means and shoulder means adjacent its juncture to said strap whereby said plug substantially fills the enlarged mouth of said socket, said enlarged portion, said guide means and said flanges forming said plug preventing the introduction of tool means into said socket to disengage said barb from said recess thereby making said shackle tamperproof.

4,221,410

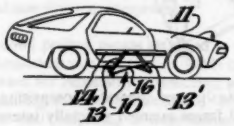
VEHICLE PROTECTIVE GUARD

Jeffrey S. Dawson, 24 Golfview Drive, Newark, Del. 19702

Continuation-in-part of Ser. No. 868,487, Jan. 11, 1978, abandoned. This application May 10, 1979, Ser. No. 37,671

Int. Cl.[3] B60R *19/02*

U.S. Cl. 293—21 **5 Claims**



1. A protective guard apparatus to be used in combination with a motor vehicle which comprises, in combination,

(a) bumper means positioned parallel to a side of said vehicle comprising an elongated bumper containing two slides slots elongated in the direction of elongation of the bumper;

(b) extension means affixed to the vehicle for moving said bumper means between a position adjacent said vehicle and another position spaced further away from the side of said vehicle;

(c) pivot means operatively connected to said bumper means and said extension means for upwardly raising and downwardly lowering said bumper means when spaced away from the side of said vehicle comprising two support arms, each having one end slidably affixed to a different said slide slot and the opposite end of each in permanently affixed relation with one another, said arms being engaged in said slide slots such that when ends of the arms are moved along the slides slots the bumper means moves upwardly from one position being the closed position, to a second position, being the raised position parallel to the first position and when the ends of the arms are moved in the opposite direction along the slide slots, the bumper means moves downwardly from the raised position to the closed; and

(d) locking means for maintaining the bumper means in raised position.

4,221,411

DEVICE FOR PROTECTING A COATING ON DOOR OF AUTOMOBILE

Soji Kawada, No. 49-6,5-chome, Nakano, Nakano-ku, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,351

Claims priority, application Japan, Jun. 15, 1977, 52-69954

Int. Cl.[2] B60R *27/00*

U.S. Cl. 293—118 **8 Claims**

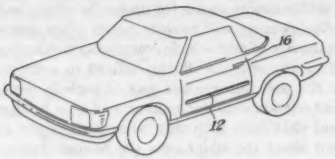
1. In a device for protecting the outer surface of an automobile door comprising an operating mechanism and a protector mechanism provided within the door, said operating mechanism including an axially movable rod means having a terminal portion projecting from a hinged edge of the door to contact with an adjacent part of the body of the automobile and move axially during opening and closing of the door, and said protector mechanism including a pivotally mounted protector having a curved portion, and means connecting said protector with said operating mechanism for turning the protector around the free edge of the door during opening movements thereof in response to movement of said rod to guard the outer surface of the opening door, and for turning the protector back into the confines of the door during closing movements of the door, the improvement comprising a sliding member carried within said door, said protector being pivotally mounted on said sliding member and wherein said means for connecting said protector with said operating mechanism includes means for moving said sliding member towards said free edge of said door when the door is open prior to turning the protector around the free edge of the door and for moving said sliding member away from said free edge of the door when the door is closed subsequent to turning the protector back into the confines of the door.

4,221,412

EXTENDABLE VEHICLE LATERAL SIDE GUARD

Diane Miller, 2241 NE. 34th Ct., Lighthouse Point, Fla. 33064

Filed Nov. 6, 1978, Ser. No. 958,262
Int. Cl.[2] B60R *27/00*
U.S. Cl. 293—118 **1 Claim**



1. A system for protecting each lateral side of a vehicle to protect doors, fender panels, or the like, the system including a bumper protective strip having the aesthetic appearance of a conventional decorative strip, the system comprising:

a least one elongated, conventionally appearing guard strip;

a means for mounting said guard strip in a first position along the external side of a vehicle, said first position having said elongated strip mounted flushly with the external surface of the vehicle, giving the external strip a conventional appearance;

means for moving said elongated strip from a first flush position against the external surface of a vehicle panel or door to a second extended position substantially away from the external surface of the vehicle; and

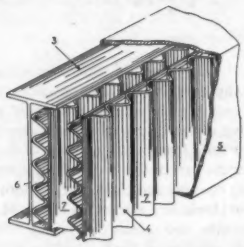
means for retaining said elongated strip in said first position flush against the vehicle lateral external surface or in a second position extended away from said surface.

4,221,413

SHOCK ABSORPTION BUMPER FOR AN AUTOMOTIVE VEHICLE

Yves Bonnetain, 28 Rue Laurent Carle, Lyons 8[e] (Rhone), France

Continuation of Ser. No. 699,009, Jul. 2, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 882,194
Int. Cl.[2] B60R *19/04*; B61F *19/04*
U.S. Cl. 293—122 **9 Claims**



1. A bumper for a heavy goods vehicle comprising:

a support member;

a core member comprising a plurality of arcuate bands mounted to said support member, each of said plurality of arcuate bands having a corrugated configuration, said corrugated configuration forming troughs and ridges with symmetrical offset apices, said apices in each band defining axis of orientation parallel therebetween, said arcuate bands being stacked in direct contact with each other with the apices of said corrugated configuration of adjacent arcuate bands overlaying each other in abutting relationship so as to form spaces between adjacent bands;

means joining said abutting apices to each other, said plurality of arcuate bands thereby formed into a tier, said tier being concurrently deformable under compressive loading by flattening of said corrugated configuration of said plurality of arcuate bands;

means for mounting at least one of said plurality of arcuate bands to said support member; and

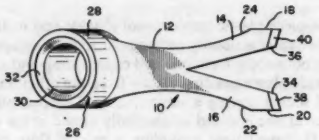
a deformable outer body enclosure means entirely surrounding said support member and said tier, said outer body enclosure means being in contact with said support member and at least one of said plurality of arcuate bands so that when a force strikes said enclosure means, said arcuate bands permanently deform by concurrent mutual flattening of the apices, thereby resisting the striking force and absorbing said force.

4,221,414

CONTACT LENS INSERTION AND REMOVAL DEVICE

Israel Schrier, Irondequoit, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,250
Int. Cl.[2] A61F *9/00*
U.S. Cl. 294—1 CA **10 Claims**



1. A device for aiding a user of soft contact lenses in introducing and removing a soft contact lens from an eye, comprising:

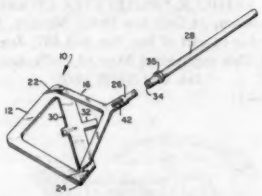
a bifurcated member having longitudinal and vertical axes the two branches of which are flexible and extend angularly away from the point of division and terminate in flexible contact lens gripping surfaces oblique to both the longitudinal and vertical axis and supportive of the anterior surface of the lens to aid the user in introducing the lens to the eye at the proper angle and to raise the edge of the lens from the eye when placed against the lens by squeezing the flexible branches together to break the surface tension between the lens and the eye to provide for easy removal of the lens from the eye.

4,221,415

CANINE WASTE DISPOSAL APPARATUS

Samuel Ganz, 3065 Sedgewick Ave., Bronx, N.Y. 10468

Filed Nov. 6, 1978, Ser. No. 958,113
Int. Cl.[2] A01K *29/00*
U.S. Cl. 294—1 BA **7 Claims**



1. A canine waste disposal apparatus comprising a first frame member, a second frame member pivotally interconnected to the first frame member, independent fastening means on said frame members for releasably securing foldable sanitation sheet material, elongate handle means releasably attachable to either of said frame members for positioning the apparatus in a waste receiving mode and weight distribution means for bias-

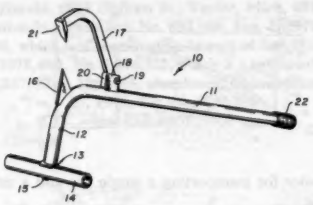
ing one of said frame members to rotatably close upon the other of said frame members when suspended by the handle means to envelop waste deposits within the sheet material whereby the collected waste can be removed for disposal.

4,221,416

LOG LIFTING APPARATUS

Carl F. Piontkowski, Old Saybrook; Robert E. Brugger, Torrington; Richard H. Bartley, Harwinton, and Ernest J. Waldron, Jr., Torrington, all of Conn., assignors to C & D Distributors, Inc., Old Saybrook, Conn.

Filed Nov. 21, 1978, Ser. No. 962,690
Int. Cl.³ B66F 7/22
U.S. Cl. 294—17 **2 Claims**



1. An apparatus for lifting logs comprising:
an elongated lever arm, said lever arm having first and second linear portions interconnected by an arcuate portion, said first linear portion being of greater length than said second linear portion, said arcuate portion transcribing an angle of less than 90°, the axes of said linear portions and said arcuate portion lying in a common plane;
a first claw rigidly attached to said lever arm arcuate portion, said first claw extending from said lever arm to the outside of said arcuate portion and terminating in a log engaging point;
an elongated foot, said foot being removably attached to the free end of said second linear portion of said lever arm and defining a fulcrum about which the log lifting apparatus pivots, said foot having an axis oriented generally transversely with respect to said common plane; and
log gripping means pivotally mounted on said lever arm first linear portion intermediate the ends thereof, said log gripping arm means including a movable second claw having a log engaging point, said first claw engaging one portion of a log and said log gripping arm means being capable of pivoting with respect to said lever arm to cause said second claw to engage another portion of the log whereby the log may subsequently be raised and lowered by application of force to the first linear portion of said lever arm adjacent the free end thereof.

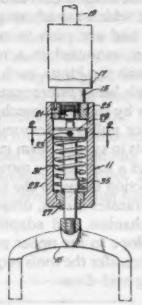
4,221,417

LINE RELEASE SYSTEM

John H. Towle, 41 Brookside Dr., Apartment D, Lansdale, Pa. 19446

Filed Aug. 19, 1976, Ser. No. 715,735
Int. Cl.³ B64D 17/38
U.S. Cl. 294—83 A **18 Claims**

1. A line release system, comprising:
a line;
first and second pulling means attached to each end of said line for imposing varying tension loads on said line;
latching means for releasably connecting said line to either of said pulling means until actuated to release said line therefrom and including a depressible plunger which, when depressed, actuates said latching means to release said line; and
actuating means located between and fixed to said latching means and to said one of said pulling means for actuating said latching means when said line undergoes a first preset tension load followed by a lesser second preset tension load, and including
a hollow casing attached at one end to said latching means;
a rigid member slidably disposed within said casing and extending from the other end of said casing and being secured at one end to said one of said pulling means, the other end of said member being configured to contact said plunger;



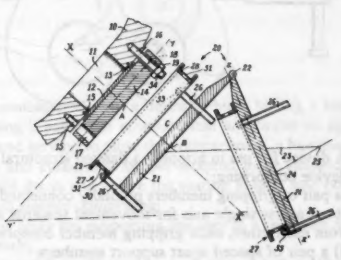
a shear pin rigidly connecting said member to said casing and configured to break under the first preset tension load; and
resilient means, capable of recovering from compression thereof, disposed within said casing for urging said member, in a direction opposite to that of the tension loads, against said plunger, while said line is under the second preset load.

4,221,418

APPARATUS FOR HANDLING A COVER OF A STEAM GENERATOR IN AN ELECTRO-NUCLEAR STATION

Joseph-Raoul L. G. G. Godart, Montignies-le-Tilleul, Belgium, assignor to Ateliers J. Hanrez S.A., Belgium

Filed Jul. 5, 1978, Ser. No. 922,212
Claims priority, application Belgium, Nov. 24, 1977, 182909
Int. Cl.² B66C 1/62
U.S. Cl. 294—90 **7 Claims**



1. A handling apparatus for facilitating and accelerating the removal and fitting of a heavy cover, particularly a conventional cover either of the double-walled type or of the single-walled type comprising two superposed discs secured over an access opening formed in the envelope for carrying out periodical inspection and maintenance work on the enclosure of either a steam generator or a pressurizing unit of an electro-nuclear station, one of the discs being fitted on the envelope to seal if off, whereas the other, known as the plug and being wider and thicker than the first, is held against the first disc by bolts and fixing nuts to enable the first disc to resist the high pressure obtaining in the envelope and has radially extending

tapped blind-end holes for securing it to a transfer device, characterized in that it comprises, firstly, a rigid frame, called a hinge, movable about a fixed axis by a rocking piston-and-cylinder unit attached laterally to the hinge and applied against a fixed point so as to position the hinge in a precise and reproducible manner about the vertical, either to one side of the latter in a "bottom" position parallel to the plan of the double-walled cover, or to the other side in a "top" position, secondly, a transfer mechanism formed by three screw-bolts, perpendicular to the plane of the longitudinal axis of the hinge and called control screw-bolts, which are advantageously arranged in an equilateral triangle and are each in engagement with a nut, called a control nut, mounted in a roller-bearing unit of a mounting integral with the hinge, each nut carrying a toothed wheel and the wheels being interconnected by a chain which may be driven either by an electromechanical unit or by a hand pulley, which unit or pulley is secured to the hinge so as to drive the control nuts in synchronism in situ and thus to impart to the control screws a translatory movement in one direction or the opposite direction between the envelope and the hinge, and thirdly, a load-transfer means, detachably secured by nuts to the transfer mechanism, and adapted to transfer the two discs from the envelope to the upper position and vice versa, and also adapted to transfer the tools required for mechanically removing and fitting said discs.

4,221,419

GRIPPING DEVICES

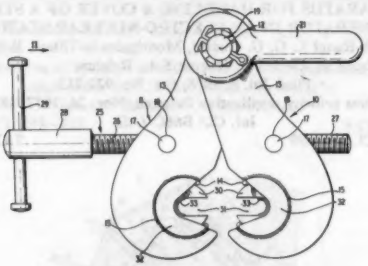
Keith Riley, 1, Snell Grove; Kenneth A. Riley, 1, The Castle, Castle Road, both of Colne, Lancashire, England, and Gerrard J. Stoney, Preston, England, assignors to Keith Riley and Kenneth Alan Riley, both of Colne, England

Filed Feb. 15, 1978, Ser. No. 877,971

Claims priority, application United Kingdom, Feb. 19, 1977, 7093/77

Int. Cl.[2] B66C *1/64*

U.S. Cl. 294—106 **3 Claims**



1. A device for use in gripping a flanged structural member, said device comprising:

(a) a pair of gripping members pivotally connected together about a first single axis for movement towards and away from each other, each gripping member comprising:

(i) a pair of spaced apart support members;

(ii) a cylindrical tube parallel to said first axis interconnecting the pair of spaced apart support members;

(iii) a cylindrical member which is a sliding fit in the cylindrical tube and can hence rotate therein about an axis parallel to said first axis;

(iv) a radially extending slot in the cylindrical member shaped to receive a flange of the flanged member;

(v) a cut-away portion in the cylindrical tube extending along the length of the tube to allow access to said slot in the cylindrical member; and

(vi) a stop member means immovably affixed to each end of the tube for holding the cylindrical member captive and preventing the cylindrical member from sliding longitudinally out of the tube;

and:

(b) adjustable means operable to urge the gripping members together to clamp a flanged member therebetween with a flange of the flanged member received in the slot of the cylindrical member of each gripping member.

4,221,420

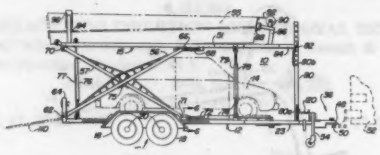
CAR AND BOAT TRAILER

Larry E. Vencill; Harold R. Cruse, and William O. Conner, all of Richmond, Ky., assignors to Car Cruise & Associates, Inc., Madison, Ky.

Filed Mar. 31, 1978, Ser. No. 892,212

Int. Cl.[2] B60P *3/08*

U.S. Cl. 296—1 A **6 Claims**



1. A trailer for transporting a single car and a single boat comprising

a first support assembly adapted to carrying said car,

a second support assembly adapted to carrying a boat movable from a lower position immediately above said first support assembly to a raised position above said first support assembly to provide clearance for said single car,

a first and a second pair only of pivoted scissor arms slidably secured to opposing sides of said first and second support assemblies,

hydraulic means coupled only to said first and second scissor arm pairs for actuating said scissor arm pairs to move said second support assembly between the raised and lowered position whereby solely said hydraulic means and said first and second scissor arm pairs are effective to move said second support assembly between said positions,

an upright support releasably secured to said second support assembly when in the raised position to provide support to said second support assembly, said upright support being fixedly secured to said first support assembly adjacent one end of said trailer, and said first and second pair of scissor arms being disposed adjacent the opposing end of said trailer thereby to provide support for the raised second support assembly at said ends of said trailer.

4,221,421

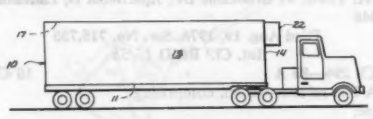
MOVABLE VEHICLE PARTITION ASSEMBLY

Clyde Bettker, Jr., Selah, Wash., assignor to Lawrence Snow, Yakima, Wash.

Filed Sep. 5, 1978, Ser. No. 939,287

Int. Cl.[2] B62D *33/04*

U.S. Cl. 296—24 B **7 Claims**



1. In an enclosed vehicle body having a floor, a ceiling, a pair of transversely spaced side walls, an end wall across one end of the vehicle body, and a full width end door assembly across its remaining end;

a plurality of upright rigid panels of impervious solid material, each panel having a height extending substantially from the floor to the ceiling of the vehicle body;

individual support means connected between the interior of the vehicle body and each panel mounting the individual

panels for movement relative to the vehicle body between a first position juxtaposed parallel to one wall and a second position arranged either parallel to and spaced from said longitudinal wall or at an angle to one said wall for arranging selected panels within the boundaries of the vehicle body to form an upright partition leading inward from the end door assembly to one wall of the vehicle body and subdividing the interior of the vehicle body into two compartments;

means for modifying the environmental temperature in one compartment relative to the environmental temperature in the other compartment.

4,221,422

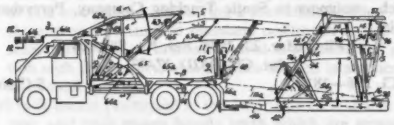
VEHICLE TRANSPORT TRAILER

Billy E. Harold, 6869 Oldham St., Taylor, Mich. 48180

Continuation-in-part of Ser. No. 692,060, Jun. 2, 1976, Pat. No. 4,106,805, which is a continuation-in-part of Ser. No. 590,196, Jun. 25, 1975, Pat. No. 3,994,523, which is a continuation of Ser. No. 452,237, Mar. 18, 1974, abandoned. This application Mar. 27, 1978, Ser. No. 890,236

Int. Cl.[2] B60P *3/08*

U.S. Cl. 410—26 **8 Claims**



1. A vehicle transport system mounted on a tractor and trailer for carrying a plurality of vehicles comprising:

a plurality of upper elevatable trailer tracks mounted on said trailer and operable to be height adjusted for loading and unloading;

a plurality of lower trailer tracks mounted proximate the bed of said trailer;

a first lower track mounted on said tractor and substantially aligned with the forwardmost of said pluarlity of lower tracks;

a second upper track mounted on said tractor and substantially aligned with said plurality of upper trailer tracks; and a third upper track mounted on the cab of said tractor forwardly located and alignable relative to said second upper track; said last mentioned track further having a forward extensible track portion, said second upper track mounted on said tractor being attached to a tractor side panel and connected to an included fluid operated cylinder and rod assembly for raising and lowering said second upper track.

4,221,423

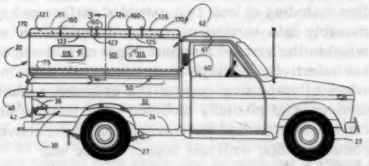
COVER FOR A VEHICLE BOX

Raymond J. Stone, 6960 Highway 9, Felton, Calif. 95018

Filed Nov. 1, 1978, Ser. No. 956,868

Int. Cl.[3] B60P *7/02*

U.S. Cl. 296—100 **11 Claims**



1. A cover for use with a substantially rectangular vehicle box having a pair of transversely spaced opposite side walls and a pair of longitudinally spaced opposite end walls defining an upwardly disposed opening comprising:

A. means on the end walls and the side walls having a raised edge circumscribing the opening and a depressed edge extended inwardly of the raised edge providing an upwardly disposed recessed surface;

B. a plurality of substantially rectangular panels, each panel having a pair of substantially parallel side edges and being disposed with one of said edges in juxtapositioned, parallel relation to one of said edges of another panel, the panels having a covering position in which they are disposed substantially in a common plane and have opposite ends rested on said surface of the depressed edge and fitted between the raised edge aligned transversely in a row extending longitudinally of the box; and

C. hinge means interconnecting the juxtapositioned side edges of the panels for relative movement of the interconnected panels about axes extending parallel to and between their juxtapositioned edges and for folding the panels from said covering position starting with either end of the row thereof.

4,221,424

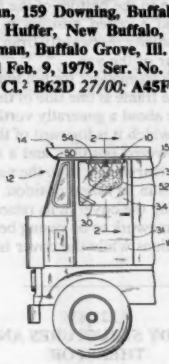
MOTOR VEHICLE SLEEPER

Martin A. Eiserman, 159 Downing, Buffalo Grove, Ill. 60090, and Douglas L. Huffer, New Buffalo, Mich., assignors to Martin A. Eiserman, Buffalo Grove, Ill.

Filed Feb. 9, 1979, Ser. No. 10,944

Int. Cl.[2] B62D *27/00*; A45F *3/24*

U.S. Cl. 296—146 **13 Claims**



1. In combination with a motor vehicle having a body encompassing a passenger compartment and doors on opposite sides of and serving to close the compartment, a hammock-like portable and collapsible sleeper adapted to be suspended between said doors and above the seating area in said compartment, said sleeper comprising:

a fabric body for supporting the user in a reclining position thereon,

a stop member adjacent to each of opposite ends of said sleeper body, and

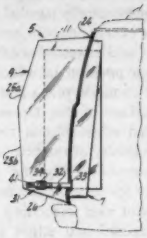
flexible connecting means interconnecting each of said stop members and said sleeper body and being sufficiently thin for interposition between the tops of said doors and the vehicle body with the doors closed tightly against the vehicle body,

said connecting means being interposed in said manner between respective doors and the vehicle body with said stop members abutting against the outside of the vehicle at the joints between the doors and the vehicle body for supporting said sleeper body in said compartment while in use.

4,221,425
VAN ATTACHMENT

John J. Welle, and James O. Kerner, both of 326 Brown, Collinsville, Ill. 62234

Filed Oct. 30, 1978, Ser. No. 955,894
Int. Cl.[2] B60P 3/32
U.S. Cl. 296—163 18 Claims



1. An attachment for a motor vehicle, such as a van, having an opening at the back of the van for entry into and exit from the van, said attachment comprising:

a frame adapted to be fitted into said opening and secured to the van,

a cover hinged to the top of the frame for swinging on the frame about a generally horizontal axis between a lowered position in which it extends down along the back of the van from the top to the bottom of the frame for covering the opening, and a raised position in which it extends generally horizontally rearwardly from the van to provide a roof to the rear of the van,

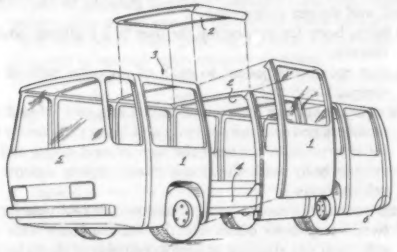
a rack comprising a framework for holding equipment or the like hinged to the frame at one side of the frame for swinging on the frame about a generally vertical axis between a first position in which it is forward of the cover when the latter is in its lowered position, and a second position in which it extends rearwardly from the van below the cover when the latter is in its raised position, and

means for supporting the cover in its raised position thereby to enable the framework to be swung between its said first and second positions while the cover is in its raised position.

4,221,426
VEHICLE BODY STRUCTURES AND PANELS THEREFOR

Gordon A. Wardill, Cranfield, England, assignor to National Research Development Corporation, London, England

Filed Mar. 9, 1978, Ser. No. 885,032
Claims priority, application United Kingdom, Mar. 11, 1977, 10364/77; Oct. 11, 1977, 42294/77
Int. Cl.[2] B62D 27/00
U.S. Cl. 296—178 14 Claims



1. A body panel for a vehicle, a lightweight construction containing reinforcement members which contribute to said panel sufficient strength for said reinforcement members to serve as part of both a transverse and longitudinal load-bearing frame structure of said vehicle, comprising:

a panel formed from plastics by moulding wherein;

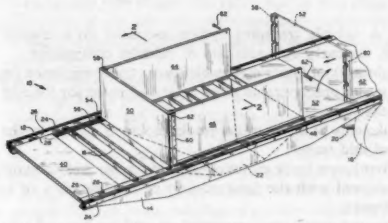
said reinforcement members include both longitudinally-arranged and transversely-arranged primary reinforcing members moulded within said panel; and

said primary reinforcing members include attachment means such that said panel may be joined to transversely adjacent panels so that said transversely-arranged primary reinforcing members unite with similar reinforcing members in said adjacent panel to form part of said transverse load-bearing frame structure of said vehicle, and such that said panel may be joined to longitudinally-adjacent panels so that said longitudinally-arranged primary reinforcing members unite with similar reinforcing members in said adjacent panel to form part of said longitudinal load-bearing frame structure of said vehicle.

4,221,427
CONVERTIBLE TRAILER BODY CONSTRUCTION

Jesse W. Sentle, Jr., Pittsburgh, Pa., and Gerald J. Kish, Erie, Mich., assignors to Sentle Trucking Company, Perrysburg, Ohio

Filed Mar. 22, 1978, Ser. No. 888,854
Int. Cl.[2] B62D 27/00
U.S. Cl. 296—181 5 Claims



1. A convertible trailer body construction comprising:

a generally rectangular frame,

a normally horizontal unobstructed floor carried by said frame;

ground engaging wheel means,

means for attaching said wheel means to said frame;

hopper means adapted to depend beneath said frame;

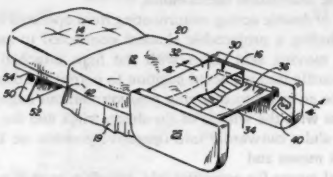
bin means positioned to extend above the level of said frame and adapted to form a granular material containing zone in selective communication with said hopper means, said bin means including at least two normally horizontally disposed extended surface floor sections having one of the marginal edge portions thereof pivotally connected to said frame to enable the respective floor sections to be pivoted upwardly from a horizontal to a vertical position to form the opposing walls of said bin means, said bin means further including at least two extended surface end sections movable into vertical contact with said floor sections wherein the vertical marginal edges of said end sections are selectively sealingly interconnected with marginal edges of respective ones of the extended surface floor sections, said pivotally mounted floor sections and said extended surface end sections defining a zone above and in communication with said hopper means; and

U-shaped sealing means for achieving a seal between the vertical marginal edges of said extended surface floor sections and respective marginal edges of said extended surface end sections.

4,221,428
CONVERTIBLE CHAIR AND BED

John C. Bowman, and Terry K. Bowman, both of 2911 E. Osborne, Phoenix, Ariz. 85016

Filed Mar. 20, 1979, Ser. No. 22,092
Int. Cl.[2] A47C *13/00, 17/04*
U.S. Cl. 297—110 3 Claims



1. An article of furniture convertible from a chair to a bed comprising:

(a) a seat section having a front, opposite sides and a rear portion;

(b) an arm section having generally vertical support members disposed generally at opposite sides of said seat section, said arm section being pivotally secured to the front of said seat section and having a first chair position with the arm section support members positioned at opposite sides of said seat section and pivotal to a second bed position with the arm and seat sections aligned in a generally horizontal position;

(c) rack means positioned at the inner side of said arm section, said rack means having teeth which are upwardly opening when said seat section is in said second position; and

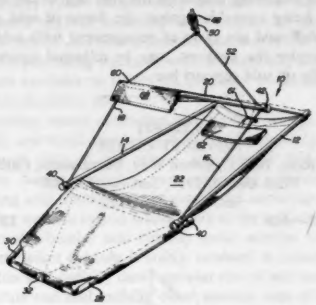
(d) a back rest section pivotally secured to the rear of said seat section and pedestal means freely hingedly secured to said back rest pivotal from a generally horizontal to a generally vertical position, said pedestal extending substantially across the width thereof, locking pin means projecting from opposite sides of said pedestal whereby said pin means are engageable in said rack means when the back rest section is pulled to a near vertical position and whereby said article of furniture is positionable as a chair with said arm section in said first position and said locking pin means engaged in said rack and said article of furniture positionable as a bed with said arm section in said second position and said pin means disengaged from said rack means and said pedestal engaging the surface and supporting said back rest section in a generally horizontal position.

4,221,429
SUSPENDED RECLINER

Mark W. Wade, Boynton Beach, Fla., assignor to James Nemec, Palm Beach, Fla., a part interest

Filed Sep. 28, 1978, Ser. No. 946,841
Int. Cl.[2] A45F *3/22*
U.S. Cl. 297—277 10 Claims

1. A suspended recliner comprising: a main body portion for supporting the body of a person; a foot support portion connected to the main body portion and adapted to support the lower extremities of a person, said foot support portion being capable of assuming a position vertically depending from said main body and a second position substantially in alignment with said main body; wherein said main body includes two longitudinally extending bar members spaced from and parallel to each other; said foot support portion comprising a footrest including a frame having two free ends with each of the free ends engaging a separate one of the bar members; and further including a support rope connected to each bar member and frame by passing through the bar member first and then the frame such that when a force is applied to the main body, the force will be transmitted through said connection to orient the frame in a plane spaced vertically below said bars, and further wherein said rope is attached to said frame at a position spaced from said free ends to form lever arms such that when the footrest is in the aligned position, each said lever arm applies a

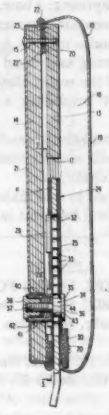


force to the bar member which force acts to keep the footrest in the aligned position; and a suspension bar extending for the width of the suspended recliner supporting said support rope and a length of rope connected from each end of the suspension bar to the main body of the suspended recliner.

4,221,430
PUSH BUTTON ADJUSTER FOR CHAIR BACKREST

James W. Frobose, Haskins, Ohio, assignor to Jasper Corporation, Marshalltown, Iowa

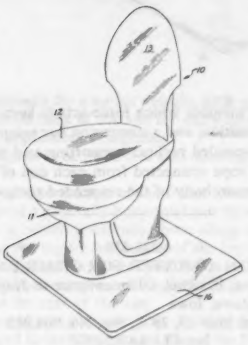
Filed May 18, 1978, Ser. No. 906,918
Int. Cl.[2] A47C *1/00*
U.S. Cl. 297—353 10 Claims



1. In an adjustable height chair backrest structure, a backrest support bar having multiple vertically spaced detent means, a bracket movably engaging said support bar and adapted for movement upwardly and downwardly thereon, a backrest anchored to the bracket fixedly and being movable therewith on said support bar, a rearward panel for the backrest, a locking and positioning pin for the backrest having a movement axis substantially at right angles to said support bar and adapted when in an active position to engage said detent means to releasably lock the backrest in a selected height adjusted position, a retaining cup anchored within an opening in said rearward panel and having a guide for said locking and positioning pin, yielding means in said retaining cup and connected

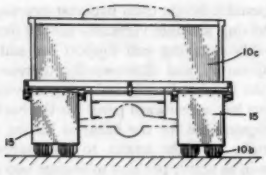
with said pin biasing it to said active position, said bracket, locking and positioning pin, and yielding means being disposed internally of the backrest and rearward panel and concealed therein, and a push button operator for said pin extending in the opening and being visible on the rear side of the rearward panel and being operable against the force of said yielding means to shift said pin clear of engagement with said detent means whereby the backrest may be adjusted upwardly or downwardly on said support bar.

4,221,431
NOVELTY CHAIR
Charles F. Rose, 7058 Lynwood Way, Sacramento, Calif. 95828
Filed Dec. 6, 1977, Ser. No. 858,008
Int. Cl.[2] A47C *1/12*
U.S. Cl. 297—445 **12 Claims**



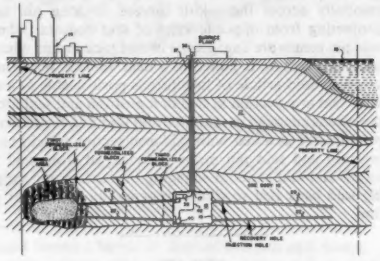
1. A novelty chair comprising: a base, said base consisting of the main base of a conventional water closet and which includes a bowl portion, and a trap
   a cushioned seat covering said bowl portion simulating the conventional seat of the water closet, secured to said base said cushioned seat providing a generally inperforate support surface;
   an upright cushioned backrest extending upwardly from the rear of said cushioned seat simulating the raised lid of a conventional water closet; and
   support means connected to said main base and to said backrest for supporting said backrest in its upright position.

4,221,432
RETRACTABLE WHEEL FLAPS FOR DUMP TRUCKS
Jack D. VanRemortel, 16031 Summit Dr., Eden Prairie, Minn. 55344, and James D. Rohr, 5600 Glen Moor Circle, Hopkins, Minn. 55343
Filed Apr. 3, 1978, Ser. No. 893,083
Int. Cl.[2] B62D *25/16*
U.S. Cl. 298—1 SG **1 Claim**



1. Retractable wheel flaps for a dump truck of the type having a pair of rear wheels and a dump body and comprising:
   elongated support means mounted in fixed transverse relation on the dump body under the tailgate of the dump truck in close association behind the rear wheels,
   a pair of flap-mounting slides slidably mounted on said elongated support means for movement inwardly and outwardly thereon transversely of the dump body,
   a pair of flaps respectively fixedly mounted on said slides and normally extending downwardly behind the wheels in close association therebehind,
   a pair of double acting reciprocating fluid operated cylinders including a projectable element connected to said slides for moving said slides with the flaps attached thereto inwardly into retracted position to permit the dump body to be swung into dumping position without engaging the flaps with the wheels of the dump truck and for moving the slides outwardly into operative position on said support means and
   control means for actuating said cylinders to shift said flaps from one position to the other.

4,221,433
RETROGRESSIVELY IN-SITU ORE BODY CHEMICAL MINING SYSTEM AND METHOD
Charles H. Jacoby, Tempe, Ariz., assignor to Occidental Minerals Corporation, Lakewood, Colo.
Filed Jul. 20, 1978, Ser. No. 926,465
Int. Cl.[2] E21B *43/28*
U.S. Cl. 299—4 **29 Claims**

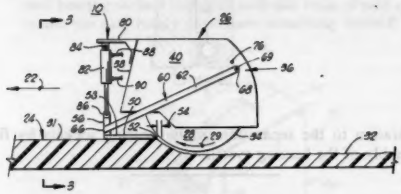


1. A method for winning desired mineral values from an ore body comprising the steps of:
   a. penetrating the ore body with a group of at least two spaced apart bore holes extending to prescribed extents from their points of entry to their distal ends in generally horizontal attitudes and in substantially parallel relation;
   b. rendering a first block of the ore body located in the region of the distal ends of the bore holes permeable to fluid travel therethrough;
   c. mining the first block of the ore body by injecting a lixiviant through one of the bore holes and into the permeabilized first block of ore while withdrawing product fluids containing the desired mineral values through another of said bore holes to form a mineral depleted first ore block; and
   d. successively rendering permeable and then mining by injection of a lixiviant retrogressively located zones of ore within said ore body from the distal ends of said bore holes to the entry points of said bore holes circumjacent to and by way of said bore holes.

4,221,434
ROADWAY BREAKER PLATE FOR A PLANAR APPARATUS

George W. Swisher, Jr., Oklahoma City, and John F. Phillips, Yukon, both of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Mar. 23, 1978, Ser. No. 889,244
Int. Cl.[2] E01C 23/09
U.S. Cl. 299—39 22 Claims



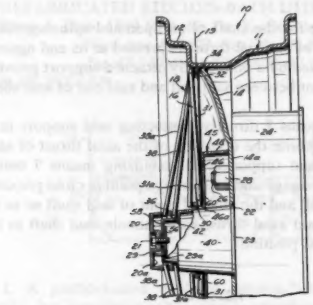
1. In combination with a planer apparatus having a planer cutter rotatable about a longitudinal axis, the planer cutter utilized for contacting and cutting away the top portion of a paved roadway, the improvement comprising:

breaker plate means for providing a counteracting shearing force on the top portion of the paved roadway forward of the planer cutter so that the removal of the top portion of the roadway by the planer cutter is effected in the form of cuttings of generally uniform size.

4,221,435
SIMULATED WHEEL COVER ASSEMBLY

Roy Hamada, 5771 Vinevale Cir., La Palma, Calif. 90623; Tad Sakai, 1106 W. Hill St., Fullerton, Calif. 92633, and Wen P. Liu, 96-98 Section 1 Nanking East Rd., Taipei, Taiwan

Filed Apr. 30, 1979, Ser. No. 34,618
Int. Cl.[3] B60B 7/00
U.S. Cl. 301—37 SS 6 Claims



1. In a vehicle wheel assembly structure having a wheel body including a radially outer tire rim of a given diameter and centrally apertured mounting flange adapted to receive lug bolts engageable by lug nuts for mounting of said wheel body to the axle hub of a vehicle, the improvement in simulated wheel centers which comprises, in combination:

an individual centrally apertured outer non-planar basket module defining a generally frustro-conical configuration having a radially inner end and a radially outer end including a radially outer substantially annular rim of a first diameter which nests within said tire rim, said individual outer non-planar basket module defining a generally frusto-conical configuration being stackable with substantially similar non-planar basket modules to achieve a plurality of nestably stackable non-planar basket modules;

an individual centrally apertured inner basket module having a radially inner end and a radially outer end including a radially outer substantially annular rim of a second diameter slightly undersize with respect to said radially outer rim of said first diameter, said individual inner basket module being stackable with substantially similar inner basket modules to achieve a plurality of stackable inner basket modules; and

a mounting means extending outwardly through said centrally apertured mounting flange and extending centrally through each of said central apertures of said inner and outer basket modules, and including retaining means urging said outer basket inwardly for securing said outer basket module to said wheel body at the radially inner end thereof whereby said radially outer annular rim of said inner basket module is stably retained in nested position within said radially outer annular rim of said outer basket module and said radially outer annular rims of said outer and inner basket modules are retained closely adjacent said radially outer tire rim to thereby simulate a monolithic multi-basket wheel assembly structure.

4,221,436
SIMULATED WIRE WHEEL COVER

Claude J. Marshall, Jr., Ann Arbor, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

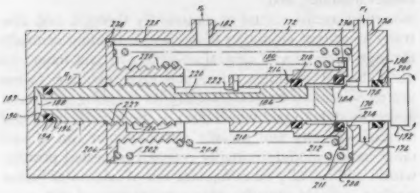
Continuation of Ser. No. 894,250, Apr. 7, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,522
The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.
Int. Cl.[3] B60B 7/04
U.S. Cl. 301—37 SS 1 Claim

1. A simulated wire wheel cover comprising: a rim portion having retention means attached thereto for attachment to the wheel of a vehicle, said rim portion having a plurality of holes therethrough to receive outwardly faced conically shaped ends of at least one series of nested substantially V-shaped simulated wire members the ends of which are in intimate contact with the annular surface defining said holes to limit the travel of said members through said holes; the body portion of said wheel cover which is radially inward of said rim portion being provided with at least one truncated conical camming surface in the region of the apex of each of said substantially V-shaped simulated wire members which bear upon said truncated conical camming surface; means attached to said body portion to capture and force each of said simulated wire members against said truncated conical camming surface to drive each of them toward said rim portion whereupon each of said conically shaped ends are maintained in intimate contact with said rim portion thereby locking each of said simulated wire members in place.

4,221,437
BRAKE PROPORTIONING APPARATUS

Roger E. Doerfler, Romulus, Mich., assignor to Kelsey Hayes Co., Romulus, Mich.

Continuation of Ser. No. 794,604, May 6, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,753
Int. Cl.[2] B60T *13/00*
U.S. Cl. 303—6 C 13 Claims



1. A hydraulic brake proportioning valve for a motor vehicle having front and rear wheel brake cylinders, comprising:

a body having hydraulic pressure inlet and outlet means, said inlet means in hydraulic communication with means for generating hydraulic pressure and said outlet means in hydraulic communication with said rear wheel brake cylinders,

said valve having passage means normally connecting said inlet means to said outlet means,

a first valve member in said body,

piston means in said body having an axially slidable circumjacent second valve member thereon normally disengaged from said first valve member to provide a space forming a part of said passage means,

a first spring biasing said piston means in a direction toward disengagement of said valve members,

a second spring normally at its free state, but adapted, upon increases in hydraulic pressure beyond a predetermined value to bias said second valve member in a direction toward engagement with said first valve member,

said piston means in hydraulic communication with said inlet means and having a surface exposed to the hydraulic pressure providing a force on said piston in a direction toward engagement of said valve members,

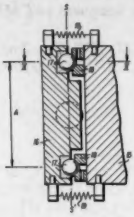
whereby, upon further increases in pressure above said predetermined value, said spring biasing forces and such pressure acting against said piston surface will actuate said valve members for the restricted flow of hydraulic fluid to said outlet means to increase the hydraulic pressure in the rear wheel brake cylinder at a rate lower than the rate of pressure increase as generated by said hydraulic pressure generating means.

4,221,438
BEARING SYSTEM FOR THE PIVOT BAR OF MICROTOMES PARTICULARLY ULTRAMICROTOMES

Hellmuth Sitte, Seefeld, and Heinrich Kleber, Vienna, both of Austria, assignors to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Sep. 25, 1978, Ser. No. 945,371
Int. Cl.[3] F16C *11/06, 11/12*
U.S. Cl. 308—2 R 7 Claims

1. Bearing system for the pivot bar of microtomes, particularly ultramicrotomes with two bearing components **15** and **16**, which are positively coupled together in each case by balls fastened to one bearing component and interlocking in appropriate bearing sockets on the other bearing component, characterized in that each of the bearing sockets for the balls (**17**) is formed as a spherical cup, and that means are provided for the transient adjustability of one of the bearing sockets or one of the balls (**17**) relative to bearing components **15** and **16** in the direction of the pivot axis (SS') of the pivot bar (**2**) running through the center points of the balls, for exact matching of the separation (A±Δ) of the bearing sockets from one another to the separation of the balls (A), or of the ball separation to the

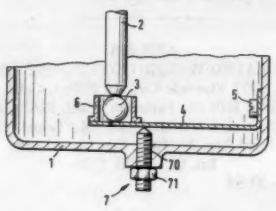


separation to the separation of the bearing sockets by final assembly of the bearing system.

4,221,439
MOUNTING FOR THE SHAFT OF AN OPEN-END SPINNING ROTOR

Henri van Ditshuizen, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Apr. 6, 1978, Ser. No. 894,110
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 7711363[U]
Int. Cl.[2] F16C *9/06*
U.S. Cl. 308—166 2 Claims



1. A mounting for the shaft of an open-end spinning rotor which by means of an axial thrust is pressed at its end against a ball that is carried by a unilaterally attached support providing a contact point between said ball and said end of said shaft comprising:

a stabilizing means **7** directly contacting said support in a direction opposite the direction of the axial thrust of said shaft **2** on said support; said stabilizing means **7** being arranged to engage said support at a point in close proximity to said ball and the contact point of said shaft so as to counteract said axial thrust and maintain said shaft in its intended axial position.

4,221,440
TAPE CARTRIDGE HOLDER

Jerry A. Morgan, 7362 Pegasus Way, San Jose, Calif. 95139

Filed Nov. 28, 1978, Ser. No. 964,289
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—11 18 Claims

1. A tape cartridge storage arrangement comprising, in combination:

a case means having a plurality of planar walls defining a storage cavity, and said plurality of planar walls comprising a front wall, a back wall oppositely disposed to said front wall, a top wall, a bottom wall oppositely disposed to said top wall and a pair of oppositely disposed side walls, and said oppositely disposed side walls having aligned bearing surface means thereon within said storage cavity;

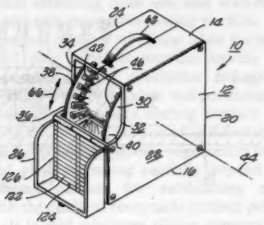
a carousel means movably mounted in said storage cavity, for rotary movement about a horizontal axis, and said carousel means comprising a pair of disc means in spaced apart relationship for detachably holding a plurality of cartridges therebetween, and each of said pair of disc means having:

a peripheral surface;

an outer surface;

an inner surface;

support means on said outer surface thereof for engaging said bearing surface means of said side walls of said case means for said rotary movement mounting thereof;



and a plurality of aligned cartridge holding means on said inner surfaces for detachably holding the cartridges therein;

hub means coupled to said inner surfaces of said pair of disc means for providing said spaced relationship thereof, and said hub means having an outer surface spaced a predetermined distance from said peripheral surface of said disc means; and

brake means intermediate said bearing surface means of said side walls of said case means and said support means of said disc means for applying a predetermined frictional force therebetween to resist said rotary movement of said disc means.

4,221,441

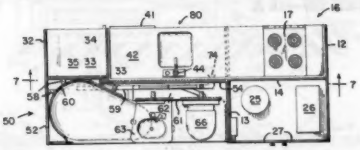
PREFABRICATED KITCHEN-BATH UTILITY SYSTEM

William J. Bain, 1540 Parkside Dr. E., Seattle, Wash. 98102

Filed Apr. 9, 1979, Ser. No. 28,572

Int. Cl.[2] E04H *1/02*; A47C *17/38*

U.S. Cl. 312—228 **4 Claims**



1. A prefabricated modular kitchen/bath/utility system ready for installation, the system provided with all utility services, comprising:

a first module made up of two back-to-back units, each unit having a lower supporting floor, sidewalls and a common back wall, one of the units supporting a range/oven and adjacent under-the-counter cabinet storage and overhead cabinet storage, the other unit including a hot water heating unit and a space heating unit covered by a pair of doors closing the open end of the module,

a second open-ended module having a lower supporting floor, back wall and parallel sidewalls with one sidewall adapted to abut the under-the-counter cabinet storage unit of the first module, the second module including space for a refrigerator unit and overhead cabinet storage, a dishwasher unit and under-the-counter cabinet storage,

a finished countertop including a sink unit covering the under-the counter cabinet storage unit of the first and second modules,

a third open-ended module adapted to fit back-to-back against the second module, the third module having a lower supporting floor, back wall and parallel sidewalls, an additional wall positioned forward and substantially parallel to the back wall forming a compartment between the additional wall and back wall of the module for utility services, the third module including a one-piece molded tub/shower unit, an adjacent lavatory unit whose upper portion overlaps the rim of the tub/shower unit and a water closet, and

wastewater drainage and vent means located in the compartment of the third module, the wastewater drainage and vent means operatively connectable to the tub/shower unit, lavatory unit, kitchen sink and water closet.

4,221,442

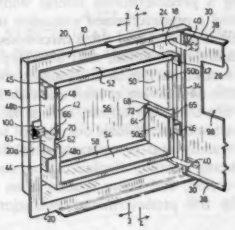
MODULAR WALL CABINET AND ASHTRAY RECEPTACLE

Julius Harangozo, Scarborough, Canada, assignor to Unique Ingenious Specialties Manufacturing and Sales Inc., Agincourt, Canada

Filed May 8, 1979, Ser. No. 37,207

Int. Cl.[2] B65D *25/24*; E05B *65/52*

U.S. Cl. 312—294 **16 Claims**



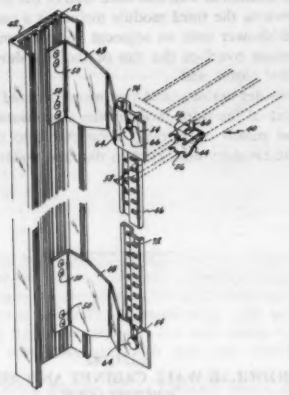
1. A modular wall cabinet and ashtray comprising, in combination, an exterior frame comprised of spaced sidewalls and top and bottom walls joined to form an integral rectangular structure, said frame walls having an outwardly extending peripheral flange for mounting the cabinet in a wall opening, a rectangular metal cabinet having a pair of opposed sidewalls and opposed top and bottom walls, said sidewalls having a pair of opposed recesses of equal width formed transversely therein equispaced from the bottom wall, an ashtray having a length substantially equal to the distance between the opposed recesses and having an equal thickness at each end slightly less than the width of the recesses for slidable insertion of the ashtray into said recesses whereby said ashtray is restricted from vertical movement and an ash receptacle space is formed within the cabinet below the ashtray, means for rigidly securing said cabinet to the exterior frame, a door pivotally mounted on said frame to open and close said cabinet, said door adapted to close said pair of opposed sidewall recesses and said ash receptacle space whereby the ashtray is locked in the cabinet when the door is closed, said door having an opening formed therein to permit access to the ashtray, and means mounted on the frame for locking the door in its closed position.

4,221,443

FULLY EXPOSED SHELF STANDARD

James J. Heaney, Glendale, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed May 30, 1978, Ser. No. 910,380
Int. Cl.[2] A47B *57/00*; A47G *29/02*
U.S. Cl. 312—306 **15 Claims**



1. In a refrigerated display cabinet, a shelf support system for supporting shelves in the interior of a refrigerated cabinet, comprising:

(a) a monolithic standard for supporting shelves on both sides thereof, said standard having all its surfaces fully exposed and longitudinally extending in a first direction, and having a predetermined lateral width in a second direction and a predetermined extension in a third direction, said first, second and third directions being substantially mutually orthogonal, said standard having a first part and a second part, each said part extending along said first direction and having at least one face having recesses extending inwardly therefrom, said at least one face of said first part and said at least one face of said second part facing outwardly and in opposite directions from each other and being laterally displaced from each other in the second direction, and being spaced from each other by substantially the predetermined extension in the third direction;

(b) means adapted to fit removably into said recesses in said surfaces, for supporting shelves; and

(c) standard support means attached to said cabinet interior, for supporting said monolithic standard within said cabinet.

4,221,444

CONNECTORS AND ARTICLES HAVING CONNECTORS THEREON

James F. Patrick, North Melbourne, Australia, assignor to The University of Melbourne, Victoria, Australia

Filed Oct. 23, 1978, Ser. No. 953,545
Claims priority, application Australia, Oct. 21, 1977, PD2147
Int. Cl.[3] H05K *1/08*; H01R *13/52*
U.S. Cl. 339—17 M **7 Claims**

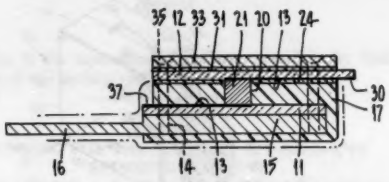
1. An electrical connector specifically for use in hostile environments comprising:

a first substrate member having positioning means, said positioning means being a portion on said first substrate member located within a surround formed on said first substrate member, a number of first conductors located on said surround and surrounded thereby;

an elastomeric connector located above said first conductors and aligned therewith;

a second substrate member having a number of second conductors corresponding to the number of said first conductors on said first substrate member, said second conductors being located relative to said first substrate member and above said elastomeric connector so that when the second substrate member is clamped onto said first substrate member, electrical connection is made between said first conductors and said second conductors via said elastomeric connector;

an apertured plate located above said second substrate member, and screws connecting said apertured plate with said bottom plate, the arrangement being such that when the components are correctly located said screws can pass



from the upper plate, through both said substrate members and be threaded into the bottom plate; and

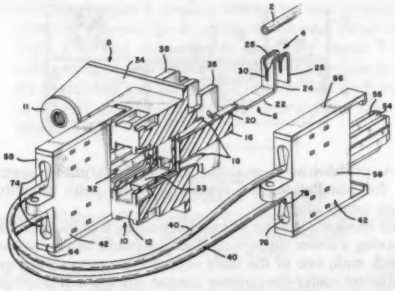
said elastomeric connector including alternate conducting and non-conducting transverse layers, the thickness of said first layers and the width and spacing of said conductors of said first and second substrate members being such that there is, when said substrate members of the connector are assembled, at least part of the conducting layer between the corresponding conductors and at least one non-conducting layer between each pairs of conductors to thereby provide sealing of said conductors and said alternate conducting layers from the hostile environment.

4,221,445

CROSS CONNECT DISTRIBUTION SYSTEM AND APPARATUS

James E. Fleischhacker, Winston-Salem, N.C.; Lincoln E. Roberts, Dunedin, and Henry G. Wasserlein, Jr., Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 2, 1978, Ser. No. 874,678
Int. Cl.[3] H01R *11/04, 29/00*
U.S. Cl. 339—18 R **7 Claims**



1. A telecommunications distribution assembly for establishing a plurality of circuits between incoming telecommunications cabling and on-premise telecommunications equipment, said assembly comprising:

(a) a plurality of multi-position miniature ribbon connector receptacles of the type having two rows of receptacle contact terminals, corresponding terminals in opposite rows in certain incoming connector receptacles connected each to one of the wires in an associated pair of incoming

conductors in said cabling, terminals in the remaining, outgoing connector receptacles being connected to wires leading to the on-premise telecommunications equipment, said receptacle contact terminals having resilient receptacle contact portions located in two rows along opposite sides of a mating recess on one side of said receptacles,

(b) a plurality of jumper assemblies, each comprising a pair of conductors both attached to a plug member at each end, each said plug member further comprising:

(i) a first insulating member having a wire-receiving portion with a receptacle mating portion having a generally H-shaped cross-section,

(ii) a pair of longitudinal passages in said first insulating member, each extending from one said wire-receiving portion to one said receptacle mating portion,

(iii) a plug terminal member of planar plate form in each passage, said plug terminal member having a wire-receiving contact having conductor engaging tines offset from the plane of said plate and positioned in said wire-receiving portion and a mating contact segment located along said mating portion of said first insulating member, and provided with one edge across the thickness of said plate extending partially beyond said H-shaped mating portion for establishing electrical contact with the resilient receptacle contact portions of the terminals in said miniature ribbon connectors,

(c) said interconnection assembly being formed by positioning plug members within said mating recess of one of said receptacles in alignment with opposite corresponding receptacle terminals in incoming and outgoing receptacles to interconnect incoming wires to wires leading to telecommunications equipment.

4,221,446

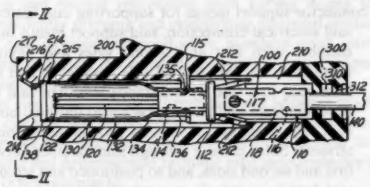
ELECTRICAL CONNECTOR ASSEMBLY

Paul D. Niles, Bainbridge; William P. Whallon, Jr., Unadilla, and Richard W. Normann, Otego, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,965

Int. Cl.³ H01R *13/28*

U.S. Cl. 339—49 R **5 Claims**



1. An electrical connector assembly for electrically connecting a first electrical conductor with a second electrical conductor, said electrical connector assembly comprising:

a first assembly having a front mating surface and a rear surface, said first assembly including:

a housing having a passage extending therethrough from an entranceway in the rear surface to an opening on the front mating surface and a forward member disposed adjacent the opening and partially extending into the passage;

a contact body mounted within said housing passage, said contact body having a forward end, a recess in the forward end and a rear end adapted to receive the first electrical conductor;

a plurality of axially aligned wires having acutely angled forward end surfaces, the rear end of said wires being mounted in the recess of said contact body and the forward end of said plurality of wires extending forwardly of said contact body; and

a first, separately-manufactured sleeve, said first sleeve being mounted to extend forwardly of said first contact body and around and forwardly of said plurality of wires for protecting the wires from external forces, said sleeve being insertable into the passage from the entranceway on the rear surface; and

a second assembly having a second front mating surface for mating with the front mating surface of the first assembly, said second assembly including:

a second housing having a second passage extending therethrough from the second front mating surface to a second rear surface;

a second contact body mounted within said second housing passage, said second contact body having a forward end, a recess in the forward end and a rear end adapted to receive the second electrical conductor;

a second plurality of axially aligned wires having acutely angled end surfaces, the rear end of said second plurality of wires being mounted within the recess of said second contact body and the other end extending forwardly of said second contact body; and

a second, separately-manufactured sleeve, said second sleeve being mounted to extend forwardly from said second contact body and around and forwardly of said second plurality of wires, said second sleeve having a cross section smaller than the first sleeve and adapted to be guided into the opening by the forward member and inserted into said first sleeve upon mating of said first and second assemblies, whereby when the first and second assemblies are mated, the second sleeve fits within the first sleeve with the plurality of wires from said first and second assemblies mated in electrical circuit relationship within said interfitting sleeves and said first and second electrical conductors are thereby joined in a predetermined electrical circuit relationship.

4,221,447

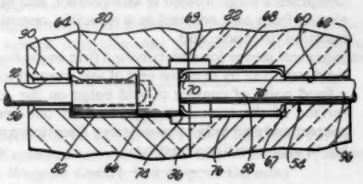
ELECTRICAL CONNECTOR

Lloyd J. Powell, Newmarket, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 916,111, Jun. 16, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 14,961

Int. Cl.³ H01R *12/13*

U.S. Cl. 339—64 M **12 Claims**



10. An electrical connector member comprising:

an insulator having a bore extending from a front face to a rear face thereof;

a socket contact including a contact body permanently mounted in said bore, said contact body embodying a forward portion extending forwardly of said front face, said forward portion having a longitudinally extending open curved channel therein adapted to slidably receive a mating pin contact;

pin contact-receiving spring sleeve means longitudinally slidably mounted on said forward portion of said contact body adapted to resiliently urge the pin contact against the wall of said channel; and

retention means separable from said spring sleeve means removably mounted over said forward portion of said contact body for retaining said spring sleeve means

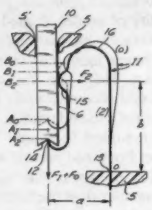
thereon, said spring sleeve means being longitudinally slidably removable from said contact body when said retention means is removed from said forward portion.

4,221,448

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Bernard A. Logerot, Mont-sous-Vaudrey; Lucien L. Péchard, and Jean-Claude A. Bouley, both of Dole, all of France, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jun. 19, 1978, Ser. No. 916,831
Claims priority, application France, Jun. 23, 1977, 77 19271
Int. Cl.³ H05K *1/07*
U.S. Cl. 339—75 MP **22 Claims**



19. A connector for effecting a resilient pressure contact with at least one conductive surface on at least one face of a rigid structure, said connector comprising:

a housing having a guide for directing the rigid structure along a path in an insertion direction;

a resilient contact mounted in said housing and having a first portion initially positioned in front of the rigid structure in said path and a second portion initially positioned out of said path;

said first contact portion being one end of said contact and being movable by a forward edge of the structure as the structure moves along said path in said insertion direction to flex said contact and bring said second contact portion into contact with the conductive surface on the face of the structure absent substantially any relative frictional contact therewith wherein said one end is movable with and displaced along said path in said insertion direction by the structure and wherein said second contact portion comprises a bulge formed in said contact, said bulge being spaced from said one end in a direction opposite to said insertion direction; and

engagement means for maintaining a firm engagement of the rigid structure by said one end of said contact to maintain a fixed point of contact of said bulge on the conductive surface of the structure whereby said one end of said contact and said bulge translate in a direction corresponding to said insertion direction.

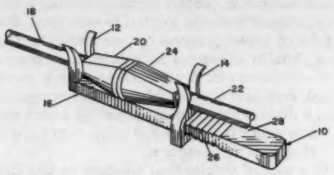
4,221,449

LOCKING DEVICE FOR ELECTRIC CORDS

James F. Shugart, Jr., 907 Cambridge Rd., Redwood City, Calif. 94061

Filed May 7, 1979, Ser. No. 36,329
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—75 P **9 Claims**

1. A locking device for two electric cords joined by a plug and a socket comprising a flat, elongated bar having transverse serrations on a portion of at least one surface thereof, an integral fixed end member at one end of said bar, a movable locking member slidably mounted adjacent the opposite free end of said bar and being adapted to provide a locking engagement with one of said serrations, said locking member comprising a transverse slot in the lower portion thereof forming a passageway for the free end of said bar, said transverse slot being slightly inclined inwardly in the direction of said free end of said bar, said fixed member and said locking member having substantially aligned openings in the mid-portion thereof adapted to receive the electric cords, said locking member



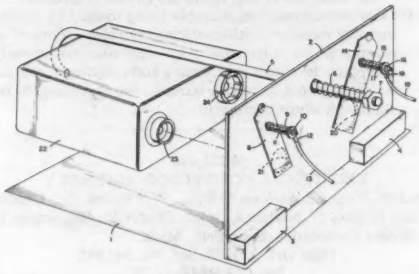
cooperating with said end member to hold said plug and said socket connected together in a fixed position.

4,221,450

BATTERY HOLD DOWN-TERMINAL CONNECTOR

Hartley M. Sears, Costa Mesa, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 8,059
Int. Cl.³ H01R *13/62*; H01M *2/10*
U.S. Cl. 339—75 R **6 Claims**



1. An apparatus for providing an electrical connector to a battery having plural electrical terminals protruding from one side, comprising:

connector support means for supporting said battery during said electrical connection, said support means including a member with first and second sides and having plural terminal holes, said second side parallel to and separated from said first side by a distance less than said terminals protrude from said battery, each said terminal hole associated with a unique one of said protruding terminals, said terminal holes passing through said member between said first and second sides, and so positioned and sized to allow said battery terminals to protrude from said second side when the terminal side of said battery abuts said first side with each of said protruding battery terminals inserted in its associated terminal hole;

retaining means for biasing said battery terminal side against said first side; and

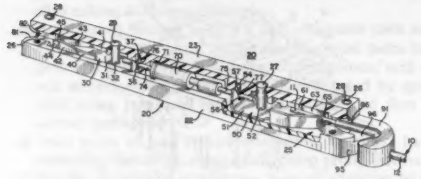
plural conductor means, each attached to said second side and covering but not entering a portion of an associated terminal hole, each said conductor means for electrically contacting the portion of the terminal associated with said terminal hole protruding from said second side,

said retaining means for biasing said battery terminal side against said first side comprising a rod extending slidably through said member and having a hook at one end for engaging the battery at the side thereof opposite the battery terminals and urging the battery terminal side against said first side of said member, said retaining means further comprising resilient means on said second side for urging said hook toward said first side, whereby said rod may be slid to move the said hook away from the said member to release said battery and permit removal thereof.

4,221,451
ELECTRICAL TEST ADAPTER PLUG

Edward F. Petrelewicz, La Grange, and Josef Keglewitsch, Addison, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 12, 1977, Ser. No. 841,273
Int. Cl.[2] H01R 13/58
U.S. Cl. 339—105 3 Claims



1. An electrical connector for providing a temporary plug-in electrical connection between independent conductive members including a panelboard terminal post and a bare terminal portion of an insulated wire conductor, said connector comprising:

an insulating housing having first and second openings thereinto;

said first opening having a portion conforming to the associated terminal post for receiving the post therethrough to mount said housing on the post;

said second opening having a portion conforming to the bare terminal portion of the associated wire conductor for receiving therethrough the bare terminal portion of the conductor;

first and second electrical receptacles disposed within said housing;

said first and second receptables each having means for independently gripping and establishing electrical contact with said independent conductive members upon introduction of one of the conductive members into a respective one of said first second openings;

said first electrical receptacle being disposed adjacent to said first opening for receiving therein in electrical contact therewith said terminal post received through said first opening and gripping said terminal post independently of said other receptacle;

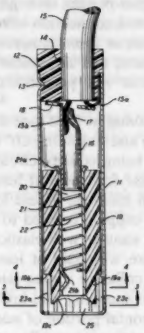
said second electrical receptacle being disposed adjacent to said second opening and having means for readily receiving therein in electrical contact therewith the bare terminal portion of an associated wire conductor received through said second opening and gripping said bare terminal portion independently of said gripping of said terminal post by said first electrical receptacle and maintaining the terminal portion in a linear configuration without deforming the bare terminal portion to provide for ready insertion and removal thereof; and

test component means disposed within said housing and interconnecting said first and second electrical receptacles for performing test operations between the panelboard terminal post gripped by said first receptacle and the bare terminal portion of said conductor gripped by said second receptacle, said test component means being removably mounted in said housing to permit interchangable interconnection of different test component means between said first and second electrical receptacles.

4,221,452
ELECTRICAL CONNECTOR

Richard C. Remington, 10 Van Riper Ave., Pompton Plains, N.J. 07444

Filed Aug. 6, 1979, Ser. No. 63,981
Int. Cl.[3] H01T 13/04
U.S. Cl. 339—143 S 5 Claims



1. A connector, comprising in combination:

a cylindrical, electrically conductive housing,

electrode means slidably disposed within said housing,

spring means normally biasing said electrode means toward one end of said housing,

said electrode means comprising an electrically insulating plunger slidably disposed within said housing,

said plunger having a longitudinal bore therethrough,

a first electrically conductive tube fixedly disposed within said bore,

said one end of said housing pierced to form a hexagonal opening therein,

a plurality of indentations formed in the wall at said one end of said housing with adjacent indentations forming recesses therebetween,

each point of said hexagonal opening alligned with one of said recesses,

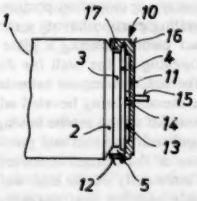
at least one of said indentations extended upward in said wall and located between adjacent points of said hexagonal piercing,

said plunger having a shoulder near one end therof normally held against said extended indentation by said spring means.

4,221,453
FLUORESCENT TUBE WITH SOCKET CAPPING

Claus P. Wagener, Dietenhofen, Fed. Rep. of Germany, assignor to Fritz Wagener GmbH, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 924,206
Int. Cl.[2] H01J 5/58
U.S. Cl. 339—149 R 5 Claims



1. A fluorescent light tube comprising a cylindrical glass

tube having end portions, connection wires passing through said end portions, and a socket capping,

said end portions being gas-tightly sealed and having an annular collar and an annular groove, said annular collar constituting the end extremity of said tube,

said socket capping being made of an elastic, bendable thermoplastic material, said capping comprising a frontal portion, contact pins passing through said frontal portion connecting with said connection wires, at least one drop of glue which dries at room temperature within a maximum of two minutes, and an annular wall extending circumferentially from and perpendicular to said frontal portion,

said annular wall having at least two knobs protruding inwardly therefrom and extending 20° circumferentially at most, said knobs being equally circumferentially spaced around said annular wall, said at least one drop of glue being applied to at least one of said knobs,

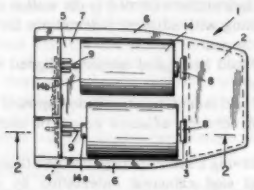
whereby when said capping is fitted to said tube over said end portions, said annular wall elastically deforms representing a curvature with said at least two knobs being pushed over said collar to scrape said glue from said at least one knob and snapping said knobs into said groove whereupon said frontal portion of said capping abuts the end-most part of said annular collar at least at circumferential locations which correspond to circumferential positions of said knobs, whereby the glue scraped from said at least one knob by said collar adhesively joins said collar and capping where said collar and frontal portion abut.

4,221,454

BATTERY BOX, PARTICULARLY FOR USE IN TOYS

Tit-Shing Wong, Kowloon, Hong Kong, assignor to Mego Corp., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,401
Int. Cl.³ H01R *13/02*
U.S. Cl. 339—176 R **3 Claims**



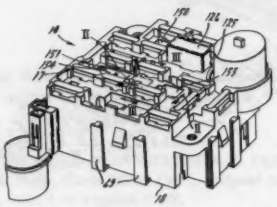
1. A battery box, particularly for use in toys, for establishing electrical contact with battery terminals, comprising a housing bounding a compartment for accommodating at least one battery and including an end wall having at least one opening therein; the opening being elongated in the direction of battery movement when inserting or removing the same; a pair of electrically conductive contact members each having a contact portion located in the compartment and adapted to contact one terminal of the battery, a mounting portion supported on the housing, and a limiting portion having a recess, at least a first one of the contact members being a plate member partially received in the opening of the wall for displacement of the contact portion thereof between an extended and a retracted position; the plate member being beveled adjacent the contact portion thereof; and flat spring means having a central portion mounted on the end wall and two end portions each received in the recess of one of the contact members, the spring being mounted on and outwardly of the end wall extending transversely of the plate member and engaging the end thereof opposed to the contact portion for biasing the first contact member toward the extended position thereof.

4,221,455

FUSE TERMINAL BLOCK WITH ALTERNATIVE MEANS FOR CONNECTION TO FUSE BLADE CONTACTS

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,474
Int. Cl.³ H01R *13/645*
U.S. Cl. 339—186 M **8 Claims**



1. A fuse terminal block assembly including a terminal block for providing connection between an automotive electrical system and fuses for fusing components of the automotive electrical system, said terminal block having a front and a rear;

said fuses having a pair of blade contacts which are positioned within said terminal block so that said blade contacts can be electrically accessed for releasable connection and disconnection from both the front and rear of said terminal block while said fuse remains in a secured position within said terminal block;

said fuse terminal block assembly having a fuse holder, a cavity and an accessory connector whereby access to a blade contact of a fuse is provided through an intermediate fuse holder connection; and

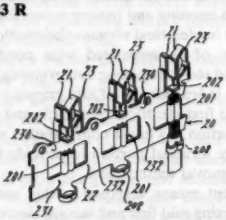
said fuse holder extending into said cavity and said cavity in said terminal block extending through said terminal block between the front and the rear of said terminal block for receiving said accessory connector thereby providing access to the same area of said fuse holder from both the front and the rear of said terminal block through a single cavity.

4,221,456

FUSE HOLDER FOR AN AUTOMOTIVE FUSE TERMINAL BLOCK

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,580
Int. Cl.³ H01R *11/22, 15/12*
U.S. Cl. 339—223 R **5 Claims**



1. A fuse holder for use in a terminal block for providing connection between an automobile electrical system and fuses used in connection with the automotive electrical system, said fuses being of a miniature nature and having a pair of blade contacts, said fuse holder having a spring clip with a pair of

prongs adapted for holding therebetween a blade contact of said fuse and a pair of attachment means for attaching an electrically conductive wire to said fuse holder;

said fuse holder further including a stop means longitudinally aligned with the wire to be connected and positioned between the wire and said two prongs of said fuse holder so that portions of said wire do not interfere with said prongs and impede connection to said blade contact of the fuse;

said fuse holder includes a plurality of spring clips, each having a laterally extending bus bar portion which together form an elongated bus bar from which said spring clips extend at spaced intervals;

said elongated bus bar having a first elongated path and a second elongated path, said first and second paths being generally parallel with spacing therebetween, said first and second elongated paths being connected by spaced reinforcing members extending between said first and second paths; and

at least some of said spaced reinforcing members having extending therefrom a pair of attaching prongs for receiving the electrically conducting wire of a lead to be connected to said fuse holder so that when an electrical wire is attached to said fuse holder by said attaching prongs, electrical access to said electrical lead is available both through said first path and said second path, thereby, for a given fuse holder width, increasing the current carrying capacity of said fuse holder in comparison to a fuse holder having a single path.

4,221,457

COIL CONNECTOR

Leslie J. Allen, Sevenhampton, Nr. Swindon; Robert L. Hall, Swindon, and Richard J. Penneck, Lechlade, all of England, assignors to Raychem Limited, London, England

Filed Jan. 17, 1978, Ser. No. 870,140

Claims priority, application United Kingdom, Jan. 24, 1977, 2715/77

Int. Cl.[2] H01R *11/04, 11/06*

U.S. Cl. 339—275 R **24 Claims**

1. A method of forming an electrical connection to an electrical cable comprising the steps of positioning the electrical cable within a *helically wound*, radially dimensionally-recoverable coil member formed from a heat-recoverable material, the coil member being in a temporarily [unstable] *stable* radially expanded configuration, and heating the coil member so that it radially recovers to a smaller radius and grips the electrical cable to form the connection, said coil member including an integral lead portion.

4,221,458

ELECTRICAL CONNECTOR RECEPTACLE

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 8, 1978, Ser. No. 940,536

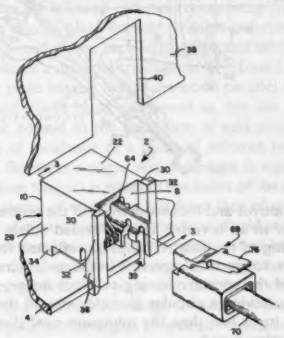
Int. Cl.[3] H02B *1/04;* H05K *1/10*

U.S. Cl. 339—126 R **4 Claims**

1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring portion extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite sidewall, and each conductor having a lead portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

said adjacent external sidewall has a plurality of side-by-side channels therein extending from said plug-receiving end towards said rearward end,

each of said conductors comprises a single elongated strip of stamped and formed sheet metal, an intermediate section of each conductor being disposed in one of said channels,



each conductor being reversely bent at said plug-receiving end and having a first end portion extending into said plug-receiving opening, a second end portion of each conductor extending beyond said housing, said first end portion constituting said contact spring portion, said intermediate portion and said second end portion constituting said lead portions, interengaging means effective between each of said conductors and said housing for maintaining said conductors in assembled relationship to said housing,

said housing having integral mounting and supporting means extending from said adjacent external sidewall for mounting said connector on a panel-like member with said adjacent external sidewall against said panel-like member,

said second end portions of said conductors extending laterally of said housing and away from said adjacent external sidewall, said second end portions of said conductors being intended for insertion into holes in said panel-like member.

4,221,459

ERECT IMAGE TELESCOPE OPTICAL SYSTEM

William E. Fisher, 335 John Street, Charlotte, Mich. 48813

Filed Aug. 7, 1978, Ser. No. 931,316

Int. Cl.[2] G02B *17/08*

U.S. Cl. 350—55 **8 Claims**

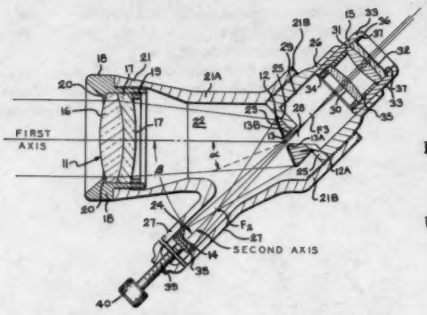
1. A catadioptric erect image telescope system which comprises:

(a) a flat surface main reflecting mirror having a small diameter oval shaped aperture and having an oval shaped reflecting surface forming the mirror;

(b) a first plural element magnifying refractor positioned on a first axis to intercept and refract light from outside the system and have a projected light focus behind the main mirror reflecting surface on line with the aperture, the mirror being at an angle such that the light is reflected on

a second axis around the aperture at an acute angle to the first axis, the refractor being circularly shaped around the first axis and being larger in circular diameter than the minimum oval diameter of the oval flat main mirror and the refractor including first and second lenses so as to correct for aberration and being spaced from the main mirror with a gas space therebetween and the angle between the axes being equal to the angle of light incidence off the main mirror;

(c) a concave surface collecting reflecting mirror circularly shaped around the second axis and spaced from the main mirror so as to focus the light, which is reflected from the



main mirror and focuses in front of the concave reflecting mirror in an inverted image formed solely by the light focusing of the first refractor as reflected from the main mirror, towards the aperture in the main mirror to a focus behind the aperture having an erect image, the concave mirror having a circular diameter around the second axis equal to or less than the minimum oval diameter of the main mirror; and

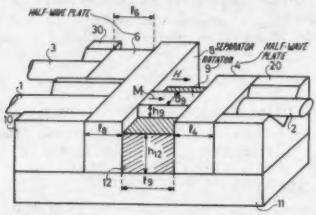
(d) a second magnifying refractor for detecting the erect image focused behind the main mirror along the second axis and positioned opposite the concave mirror on the second axis.

4,221,460

ARRANGEMENT FOR TRANSMITTING POLARIZED OPTICAL RADIATIONS

Georges Hepner, and Jean-Paul Castera, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 12, 1978, Ser. No. 941,572
Claims priority, application France, Sep. 16, 1977, 77 28065
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.13 **19 Claims**



1. An arrangement for transmitting polarized optical radiations between at least three channels (1), (2), and (3), so that radiations entering by channel (1) are collected in channel (2) and radiations entering by channel (2) are collected in channel (3); said arrangement comprising:

separation means, disposed in said channels (1) and (3), for directing said radiations incident thereon polarized in a first polarization direction x, in a first propagation direction z, between channels (1) and (2), and directing radiations polarized in a second polarization direction y in a direction z_1 different from said direction z, between channels (2) and (3), said direction y being perpendicular to said direction x;

first reciprocal radiation polarization rotating means, disposed in said channel (2), for rotating the direction of polarization of said radiations in said channel (2), the direction of said reciprocal rotating being the same for oppositely directed radiations in channel (2); and

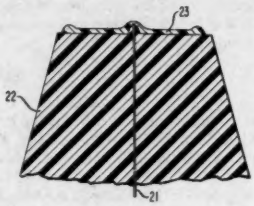
non-reciprocal radiation polarization rotating means, disposed in said channel (2) and coupling said separation means and said first reciprocal means, for rotating the direction of polarization of said radiations in said channel (2), the direction of said non-reciprocal rotating being opposite for oppositely directed radiations in channel (2).

4,221,461

FIBER CONNECTOR GAP MATERIAL

Harvey E. Bair, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 17, 1979, Ser. No. 39,851
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.20 **27 Claims**



1. An optical fiber having a transparent material adhering to an end of said fiber, for use with a compression connector,

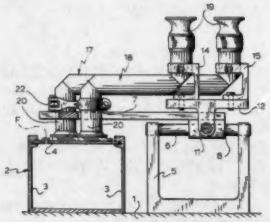
THE INVENTION CHARACTERIZED in that said material is a thermoplastic polyurethane having an index of refraction in the range of 1.30 to 1.70, and having a hardness of at least 70A on the ASTM D 2240 scale, and having a compressive strength of at least 69 MPa, and having a tensile strength of at least 24 MPa by the ASTM D 882 test.

4,221,462

STEREOSCOPIC VIEWER FOR PANORAMIC CAMERA FILM

Marius E. Huvers, Ste-Therese, Canada, assignor to Canadair Limited, Montreal, Canada

Filed Feb. 26, 1979, Ser. No. 14,835
Int. Cl.[3] G02B 27/22
U.S. Cl. 350—136 **11 Claims**



1. A stereoscopic viewer comprising a film guide holding a strip of film longitudinally extended in one direction with at

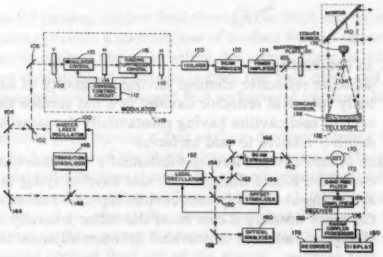
least one pair of successive image frames in extended position for viewing, a pair of optical viewing units including each an eyepiece and an objective defining an eyepiece end and an objective end respectively, a holder carrying said eyepieces and constructed and arranged for displacement in said one direction relative to said strip of film bodily with said eyepieces, and a mechanical link directly interconnecting the objective ends of the optical viewing units displaceably and dependently one relative to the other, independently relative to the eyepieces and transversely relative to said one direction for interrelated displacement of the objective ends relative to each other and relative to the eyepieces transversely of said one direction, allowing scanning of the successive image frames by the objectives and change in the separation of the latter relative to each other transversely of said strip of film in relation with the position of the objective ends longitudinally of the pair of successive image frames.

4,221,463

OPTICAL MODULATOR WITH RINGING SUPPRESSION

Edward Barsack, Auburndale; Arthur A. Chabot, Westford; Clarke E. Harris, Wayland; Donald A. Kawachi, Natick, all of Mass., and William A. Richardson, Nashua, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed May 11, 1979, Ser. No. 38,352
Int. Cl.[3] G02F *1/03*
U.S. Cl. 350—150 **13 Claims**



6. In combination:

a first electro-optical modulator crystal providing, for a linear CW laser input having a given polarization, a laser output having a first polarization the same as said given polarization when no voltage is applied to said crystal and a second polarization rotated 90° from said given polarization when an appropriate voltage is applied to said crystal;

a first polarizer positioned to receive the output of said first crystal, said first polarizer passing only said second polarization;

a second electro-optical modulator crystal positioned to receive the output of said first polarizer, said second crystal providing a laser output having the same polarization as its input when no voltage is applied to said second crystal and a laser output having a polarization rotated 90° from its input when an appropriate voltage is applied to said second crystal;

a second polarizer positioned to receive the output of said second crystal, said second polarizer passing only said second polarization; and

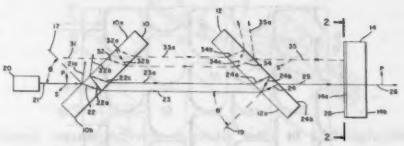
means for applying a pulse of said appropriate voltage to said first and second crystals, said applying means adapted for providing said pulse to said second crystal at the trailing edge of a said pulse applied to said first crystal.

4,221,464

HYBRID BREWSTER'S ANGLE WIRE GRID INFRARED POLARIZER

Melvin E. Pedinoff, Canoga Park; Oscar M. Stafsudd, Los Angeles, and Morris Braunstein, Marina Del Rey, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 17, 1978, Ser. No. 952,170
Int. Cl.[3] G02B *5/30*
U.S. Cl. 350—152 **1 Claim**



1. A polarizer for infrared radiation comprising:

a symmetric double-plate Brewster's angle polarizer having first and second plates, each of said first and second plates being made of a material transparent to infrared radiation and each plate having first and second parallel faces, the first of said plates being positioned so that the angle between the normal to the front face of said plate and the direction of incidence of a beam of infrared radiation is equal to Brewster's angle which in turn is equal to the angle whose tangent is equal to the index of the refraction of the material of said plate, the front face of said second plate being of said plate, the front face of said second plate being positioned at angle with respect to said beam direction which is equal to 180 minus the angle between the front face of said first plate and said beam direction to form a symmetric mirror image of said first plate; and

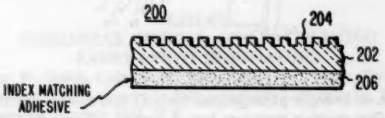
a wire grid polarizer arranged in optically cascaded relationship therewith, said wire grid polarizer being formed on the front face of said second plate which is optically adjacent to the second face of said first plate.

4,221,465

PATCHING TAPE FOR DIFFRACTIVE SUBTRACTIVE FILTER VIEWGRAPHS

William J. Hannan, and Harry J. Woll, both of Concord, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,721
Int. Cl.[2] G02B *27/38*
U.S. Cl. 350—162 SF **4 Claims**

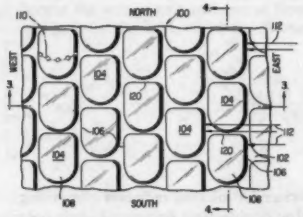


1. A diffractive subtractive filter patching tape, comprising a transparent thermoplastic tape having a predetermined diffractive structure embossed solely on one of two opposing faces thereof, and a conformal adhesive material having an index of refraction substantially equal to that of said thermoplastic tape covering the other of said two opposing faces.

4,221,466
COVER PANE FOR SOLAR COLLECTORS

Siegmar Neumann, Marsstr. 13,, 8074 Gaimersheim, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,718
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739201
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—167 17 Claims

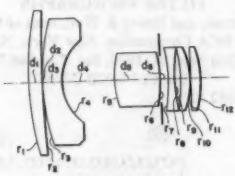


1. A cover pane for use in conjunction with a solar collector, comprising:
a base member; and
a plurality of lens elements fixedly secured upon said base member,
each of said lens elements being substantially ovoid or egg-shaped with the elongated sides thereof disposed toward the East and West directions so as to maximize solar radiation interception and collection during morning and evening hours and the uppermost portion of each of said lens elements is spherical,
the front wall of each of said lens elements is rounded and disposed toward the South direction, and
the slope of said front wall of each of said lens elements is shallower than that of said spherical portion of each of said lens elements so as to maximize the solar radiation interception and collection during the middle hours of the solar day.

4,221,467
WIDE-ANGLE PHOTOGRAPHIC CAMERA LENS SYSTEM

Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 30, 1980, Ser. No. 891,745
Claims priority, application Japan, Apr. 19, 1977, 52-44920
Int. Cl.[2] G02B *13/04*
U.S. Cl. 350—215 4 Claims



1. A wide-angle photographic camera lens system comprising a first positive meniscus lens, a second negative meniscus lens, a third positive thick lens, a fourth negative lens, a fifth positive meniscus lens and a sixth positive lens, and said lens system satisfying the following conditions:

$$ti\ 1/1.15<f/|f_{12}|<1/0.9,\ f_{12}<0 \quad (1)$$

$$0.35<d_4/f<0.5 \quad (2)$$

$$0.33<r_4/f<0.38 \quad (3)$$

$$45>\nu_1 \quad (4)$$

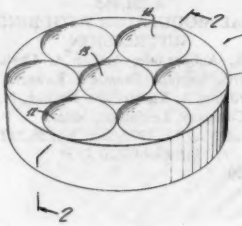
$$\nu_2>50 \quad (5)$$

wherein the reference symbol f represents total focal length of said lens system as a whole, the reference symbol f_{12} designates total focal length of said first and second lenses as a whole, the reference symbol d_4 denotes the airspace between the second and third lenses, the reference symbol r_4 represents radius of curvature on the image side surface of the second lens, the reference symbols ν_1 and ν_2 designate Abbe's numbers of the first and second lenses respectively.

4,221,468
MULTI-CAVITY LASER MIRROR

John A. Macken, 4039 Shadow Hill Dr., Santa Rosa, Calif. 95404

Continuation of Ser. No. 803,279, Jun. 3, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,220
Int. Cl.[3] H01S *3/081*
U.S. Cl. 350—292 8 Claims



1. In combination:
a radiation reflective element having a plurality of substantially spherical reflector cavities in a flat surface thereof, each of said cavities having substantially the same sagittal depth S relative to said surface;
each of said cavities having substantially the same radius of curvature R and diameter D, said cavities lying in close arrangement with adjacent cavities separated substantially the same distance d one from the other whereby an exchange of radiation is provided between adjacent ones of said cavities;
a flat partially reflective partially transparent coupling mirror separated a distance L from said reflective element; and
an optical gain section including active media and pump source interposed between said coupling mirror and said reflective element for producing a radiation beam of wavelength λ which is reflected by said reflective element and passed through said coupling mirror.

4,221,469
THERMALLY STABILIZED MIRROR

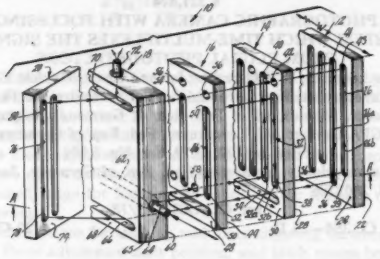
Robert K. Stalcup, Lake Park, and Russell L. Carlson, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 25, 1979, Ser. No. 51,657
Int. Cl.[3] G02B *5/08*
U.S. Cl. 350—310 5 Claims

1. A thermally stabilized mirror having a laminated structure comprising:
a faceplate having a first surface adapted for providing a reflective surface of the mirror and a second surface with a plurality of first coolant channels having a substantially parallel relationship with one another wherein alternate first coolant channels have a first and second length respectively;

a second plate having a first surface disposed against the second surface of the faceplate and a second surface with a plurality of second coolant channels having a substantially parallel relationship with one another wherein alternate second coolant channels have a first and second length respectively, said second coolant channels having the first length being disposed in a substantially vertical parallel relationship with the first coolant channels having a first length and said second coolant channels having the second length being disposed in a substantially vertical parallel relationship with the first coolant channels having the second length;

a third plate having a first surface disposed against the second surface of the second plate and a second surface having a plurality of third coolant channels having a substantially parallel relationship to one another and a substantially vertical parallel relationship with second coolant channels having the second length;



means for passing coolant fluid through the third and second plate to provide a counterflow of coolant fluid in adjacent second coolant channels within the second plate, in adjacent first coolant channels within the first plate and in adjacent vertically aligned first and second coolant channels;

a substrate plate having a first surface disposed against the second surface of the third plate and a second surface, a coolant distribution channel for providing coolant fluid to the means for passing coolant fluid through the third and second plate, means for passing coolant fluid into the mirror to the coolant distribution channel and means for passing coolant fluid out of the mirror;

a back plate having a first surface disposed against the second surface of the substrate plate; and

means for passing coolant fluid from the first coolant channels to the means for passing coolant fluid out of the mirror.

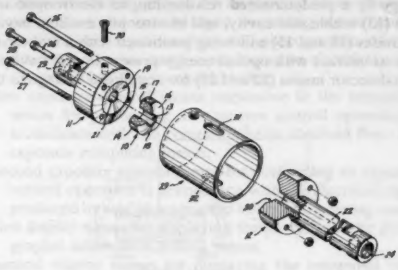
4,221,470

HIGH PRESSURE SIGHTGLASS FOR FLUID FLOW TUBE

Harold E. Weeks, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1978, Ser. No. 974,358
Int. Cl.[2] G02B *5/00*
U.S. Cl. 350—319 **15 Claims**

1. A sightglass for use in a sightglass assembly for a fluid flow tube comprising a substantially transparent sightglass tube having a substantially centered axial cylindrical sightglass bore passing therethrough, said sightglass tube having an outer tube surface and opposite tube end surfaces, each of said end surfaces being spherically configured, said outer tube surface including two substantially parallel flat viewport surface areas



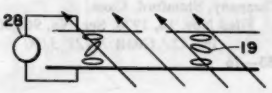
positioned on respectively opposite sides of said sightglass tube.

4,221,471

LIQUID CRYSTAL MEMORY DEVICE AND METHOD OF UTILIZING SAME

Richard W. Gurtler, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 591,561, Jun. 30, 1975, abandoned.
This application Jun. 24, 1977, Ser. No. 809,746
Int. Cl.[3] G02F *1/133*
U.S. Cl. 350—331 R **9 Claims**



1. A liquid crystal memory comprising:

a nematic liquid crystal material disposed between parallel front and rear plates;

means for preconditioning at least some of the molecules of said liquid crystal material so that their major axes are slightly slanted from a plane parallel to said plates towards one of two possible tilt directions;

writing means for causing at least some of the molecules of said liquid crystal material to assume said one of said two possible tilt directions at one or more first locations;

means for preconditioning said liquid crystal layer so that at least some of its molecules at one or more second locations distinct from said first locations will have their major axes slightly slanted towards the other one of two possible tilt directions;

writing means for causing said some but not all of the molecules of said liquid crystal layer to assume said other one of two possible tilt directions at said second locations; and

means for determining which of said two possible tilt directions has been assumed by the molecules of said liquid crystal layer at said first and second locations.

4,221,472

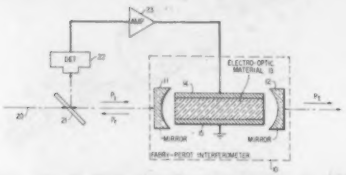
NONLINEAR OPTICAL APPARATUS USING FABRY-PEROT RESONATORS

Peter W. Smith, Colts Neck, and Edward H. Turner, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,186
Int. Cl.[3] G02F *1/03*
U.S. Cl. 350—356 **5 Claims**

1. An amplitude sensitive interferometer device comprising an interferometer cavity (10) having two mirrored ends (11 and 12), one of said two ends being arranged to receive a single frequency lineraly polarized single mode of input optical energy having a changing amplitude and the other of said two

ends being arranged to provide output optical energy whose amplitude is related to the amplitude of said input optical energy by a predetermined relationship, an electrooptic medium (13) within said cavity, said electrooptic medium having electrodes (14 and 15) and being positioned within said cavity so as to interact with optical energy present in said cavity, a photodetector means (22 and 23) for coupling a voltage to the



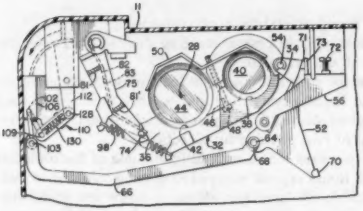
electrodes of said electrooptic medium whose magnitude is a function of the intensity of optical energy presented to an input of said photodetector means, characterized in that, a beam splitter means (21) is positioned in the path of said input optical energy to said one of said two ends of said cavity and oriented so as to deflect energy reflected from said one of said two ends into the input of said photodetector means.

4,221,473

IMAGE EXPANDER FOR REAR-SCREEN PROJECTORS

Richard L. Pitchford, Wappingers Fall, N.Y., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 16, 1978, Ser. No. 961,305
Int. Cl.³ G03B *21/22, 3/00*
U.S. Cl. 353—76 **15 Claims**



1. Apparatus for projecting images contained on image bearing means comprising

a housing;

means within said housing for handling said image bearing means;

a viewing screen mounted in one face of said housing;

means within said housing for projecting light through said image bearing means along an optical path to project said images onto said viewing screen;

at least one mirror located within said housing for folding said optical path;

lens means for obtaining two different magnifications of the images on said viewing screen including two lenses having different focal lengths;

toggle means having said lenses mounted thereon and having a first stable position in which one of said lenses is in said optical path and a second stable position in which the other of said lenses is in said optical path;

means coupled to said toggle means for switching said toggle means between said first and said second stable positions;

said toggle means including a lens platform having said lenses mounted thereon;

said lens platform having first and second ends both of which are pivotally mounted in said toggle means

actuator means pivotally mounted on said housing;

a first pivot rod mounted on said actuator;

said first end of said lens platform being pivotally and slidably mounted on said first pivot rod;

said actuator being pivoted between first and second stop means to establish said first and said second stable positions of said toggle means;

a second pivot rod mounted on the second end of said lens platform; and

a focusing bracket having first and second ends;

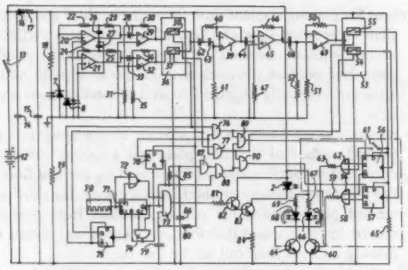
said first end of said focusing bracket pivotally coupled to said second pivot rod.

4,221,474

PHOTOGRAPHIC CAMERA WITH FOCUSSING SYSTEM WHICH TIME-MULTIPLEXES THE SIGNALS FROM PLURAL PHOTODETECTORS

Peter Lermann, P. Feldkirchen; Istvan Cocron, Munich; Eduard Wagensonner; Kurt Borowski, both of Aschheim, and Theodor Huber, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,091
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802708
Int. Cl.³ G03B *13/18*
U.S. Cl. 354—23 D **22 Claims**



1. In the focussing system of a photographic camera having an exposure objective and subject-distance adjusting means for adjusting the subject-distance setting of the exposure objective, in combination, transmitter means emitting a pulsed beam of electromagnetic radiation from the camera towards a subject to be photographed, so that such beam be reflected from the subject back towards the camera; a receiver structure for receiving the reflected-back beam, including a plurality of light detectors arranged side-by-side and located to receive the reflected-back beam, optical means located in the path of the beam incident upon the light detectors, and means coupled to the adjusting means for effecting relative movement between the optical means and the side-by-side light detectors in dependence upon the subject-distance setting of the adjusting means; and circuit means operative for receiving the signals produced by the light detectors and converting such signals into focus-control information, including shared signal-processing means for processing the signals produced by the plurality of light detectors, digital storage means registering the processed signals, and time-division-multiplexing means operative for effecting time-division-multiplexed transmission of the signals from the plurality of light detectors through the shared signal-processing means to the digital storage means.

4,221,475

CAMERA HAVING FOCUS ADJUSTING DEVICE

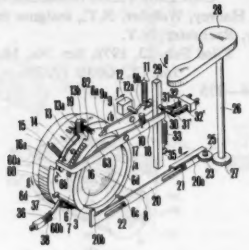
Shuichi Tamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1978, Ser. No. 965,432

Claims priority, application Japan, Dec. 9, 1977, 52-148517

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—25 **4 Claims**



1. A camera having a focus adjusting device comprising:

(a) an automatic focus detecting circuit including a photoelectric light sensor;

(b) a photographic lens;

(c) a focus adjusting member for holding the photographic lens, said member being movable within a certain determined range for focusing by means of the strength of a spring;

(d) latch means for latching said focus adjusting member in a focus adjustment start position, said latch means being arranged to release said focus adjusting member from the state of being latched to cause said focus adjusting member to start automatic focusing in response to a shutter release operation of the camera;

(e) stop means for stopping the focus adjusting member at the in-focus position, said means being operated in accordance with the output of the automatic focus detecting circuit;

(f) an operation member provided for adjusting the stop position of said focus adjusting member, said operation member being provided with stopping means which is arranged to come to engage with said focus adjusting member for stopping said focus adjusting member in an adjusted position thereof; and

(g) change-over means for releasing said latch means irrespective of the shutter release operation of the camera, said change-over means being shiftable between an automatic focus adjusting position and a manual focus adjusting position to switch said automatic focus detecting circuit from an operative state to an inoperative state and vice versa.

4,221,476

EXPOSURE ADJUSTING DEVICE FOR CAMERA

Hiroshi Aizawa, Kawasaki; Masanori Uchidoi; Susumu Kozuki, both of Kanagawa; Nobuaki Date, Kawasaki; Masami Shimizu, Tokyo, and Yoshiyuki Takishima, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1977, Ser. No. 858,084

Claims priority, application Japan, Dec. 10, 1976, 51-148441; Dec. 24, 1976, 51-155996

Int. Cl.² G03B *7/08, 1/18, 15/05*

U.S. Cl. 354—38 **12 Claims**

1. An exposure adjusting device for a camera comprising:

light measuring means for forming an electrical signal corresponding to the brightness of an object to be photographed;

photographic information setting means for setting a photographic value and having adjustable signal forming means for producing an electrical signal corresponding to a set photographic value;

exposure computing means for responding to an electrical signal produced by said light measuring means and an electrical signal produced by said photographic information setting means and for producing an electrical signal corresponding to a computed value;

first exposure control means responsive to the computing means for performing an exposure control operation in accordance with the computed value obtained from said exposure computing means;

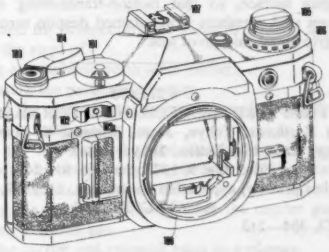
second exposure control means for performing an exposure control operation in accordance with the electrical signal produced by said photographic information setting means;

first display means for displaying the set value of the photographic information setting means;

second display means for displaying the computed value obtained by computation performed by said exposure computing means;

driving means for driving and adjusting said signal forming means;

driving control means for controlling said driving means;



first switch means shiftable between an operating position in which the first switch means renders said driving control means operative and a non-operating position in which the first switch means renders said driving control means inoperative;

operation means manually shiftable between a setting position and a non-setting position, said operation means being arranged to place said first switch means in the operation position when the operation means is shifted into the setting position and to place said first switch means in the non-operating position when the operation means is shifted into the non-setting position;

starting means for starting said first and second exposure control means;

electromagnetic release means for actuating said starting means;

second switch means for actuating said electromagnetic release means in association with a release operation of the camera; and

third switch means for connecting the camera with a supply of electric power.

4,221,477

CAMERA

Claus Prochnow, and Günter Adamski, both of Brunswick, Fed. Rep. of Germany, assignors to Rollei-Werke Franke & Heidecke GmbH & Co. Kg, Brunswick, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,111

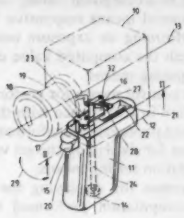
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828778

Int. Cl.² G03B *17/56, 29/00*

U.S. Cl. 354—82 **20 Claims**

1. A camera, particularly a still camera, comprising a housing mounting a lens having an optical axis; a shutter release element in said housing; a handgrip on said housing and being

at least in part turnable about a pivot axis extending transverse to said optical axis; a trigger element integrated in said handgrip; and coupling means connecting said trigger element with said shutter release element and operative for actuating said shutter release element in response to operation of said trigger element, said coupling means comprising a first coupling member connected to one of said elements and having an arcuate engaging surface, and a second coupling member connected to the other of said elements and in sliding contact with said engaging surface, so that motion-transmitting engagement between said members is maintained despite turning of said handgrip about said pivot axis.



4,221,478

FILM FEEDING MECHANISM FOR CAMERA

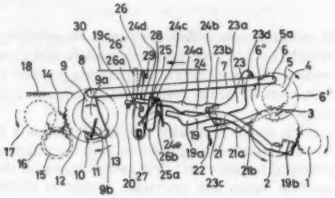
Tohru Karikawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,243

Claims priority, application Japan, Jun. 13, 1977, 52/69725

Int. Cl.[2] G03B *1/06*

U.S. Cl. 354—213 **7 Claims**



1. A film feeding mechanism in a camera having a winding shaft rotating in one direction alone for feeding a photographic film, housed in a cassette and having a single perforation in each frame, wherein the improvement comprises:

a film stop means for interrupting the travel of said film actuated; and

a detection pawl adapted to fit in a perforation in each frame of the film when said perforation arrives at a predetermined position of the end of film winding, said detection pawl actuating said film stop means when said perforation has been engaged whereby said film stop means interrupts film travel and disengages said pawl from said perforation; and wherein said film stop means comprises:

a film stop lever;

an operating member, said operating member being movable between a first position in which said film stop means is actuated and said pawl is disengaged and a second position in which said film stop means is not actuated; and

a locking member movable between a first position for locking said operating member in its second position and a second position in which said operating member is released, said locking member being biased to assume said first position and said operating member being biased to assume first position, said pawl including a means for moving said locking member to its second position at the end of film winding.

4,221,479

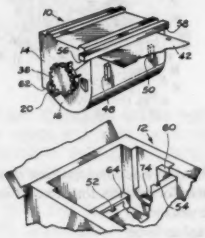
CAMERA FILM MAGAZINE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,668

Int. Cl.[3] G03B *17/26*

U.S. Cl. 354—275 **10 Claims**



1. In a partially openable film magazine insertable into photographic apparatus and having a film supply chamber, a core in the chamber for receiving a wound filmstrip, and a passageway through which the filmstrip can be lead from within the chamber as the core rotates in an unwinding direction; the improvement comprising:

releasable means for inhibiting filmstrip unwinding rotation of the core when the magazine is closed; and

means associated with said inhibiting means for releasing said inhibiting means when the film magazine is partially opened, whereupon unwinding rotation can be imparted to the core to move film through the passageway.

4,221,480

BELT SUPPORT AND CONTROL SYSTEM

Charles W. Spehrley, Jr., Hanover, N.H., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1979, Ser. No. 16,251

Int. Cl.[3] G03G *15/00;* B65G *39/16, 15/60*

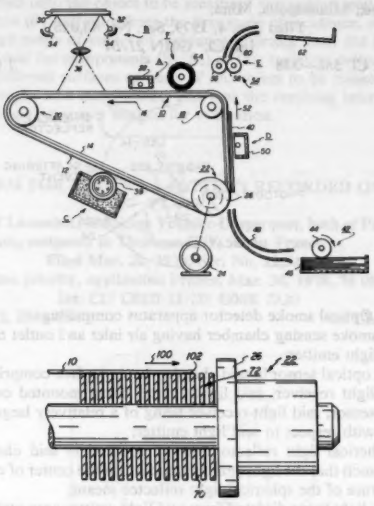
U.S. Cl. 355—3 BE **16 Claims**

9. An electrophotographic printing machine of the type having an endless photoconductive belt arranged to move in a pre-determined path, wherein the improved apparatus for supporting the photoconductive belt and controlling lateral movement of the photoconductive belt from the pre-determined path includes:

at least one rotatably mounted roller comprising a plurality of spaced, flexible discs extending outwardly from the exterior surface of said roller, each of said discs having a plurality of slits therein with each slit defining a space between one edge of said disc and the other edge thereof with the slits in adjacent discs being substantially co-linear with one another to define a plurality of spaced, longitudinally extending grooves which de-couple segments of each of said discs from one another so that at least one segment of each of said plurality of discs contacts the region of the photoconductive belt passing thereover to provide support therefor; and

means for preventing substantial lateral movement of the photoconductive belt from the pre-determined path with

the segment of each of said plurality of discs supporting the photoconductive belt being deflected and returning to



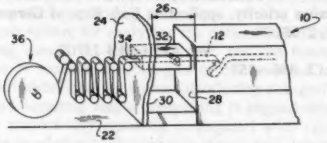
a substantially undeflected condition when not supporting the photoconductive belt.

4,221,481

PHOTOGRAPHIC PRINTER

Alan Savarick, Rockville Centre, N.Y., assignor to Beacon Photo Service, Inc., Rockville Centre, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,536
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—72 **4 Claims**



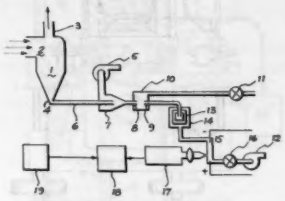
1. For a photographic printer of the type using light-sensitive development paper, improvements in the operation and operating environment of said printer effective to minimize non-operating periods thereof as are now allowed for replenishment of the supply of said development paper, said improvements comprising wall means bounding a light-controlled room, an operative location for said photographic printer in proximate external relation to said room, a hollow tunnel-like enclosure disposed in spanning relation between said room and said photographic printer effective to provide communication therebetween under light-controlled conditions, and a supply of said photographic paper put up in a supply roll of a selected large-sized diameter operatively arranged in said room for feeding therefrom through said tunnel directly into said photographic printer, to thereby contribute to significantly prolonging the duration of operation of said photographic printer without requiring replenishment of the development paper being supplied thereto.

4,221,482

MINERAL PROSPECTING BY THE DETECTION OF RADON OR IODINE

Denis J. C. Macourt, 73, Dickson Ave., Artarmon, 2064, New South Wales, Australia

Continuation-in-part of Ser. No. 739,110, Nov. 5, 1976, Pat. No. 4,136,951. This application Jul. 20, 1977, Ser. No. 817,498
Claims priority, application Australia, Jul. 20, 1976, PC6695; Jun. 3, 1977, PD0337
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.² G01N *1/00*; G01J *3/00*
U.S. Cl. 356—36 **12 Claims**



1. A method for prospecting for valuable mineral deposits comprising the steps of

collecting atmospheric particulate matter,

concentrating the particulate matter,

entrapping the concentrated particulate matter in a flow of chemically inert carrier gas,

releasing any radon or iodine gas adsorbed on said particulate matter by neutralizing the electrical charge attaching the gas atoms to the particles,

separating the particulate matter from the carrier gas and from any released gas,

passing the carrier and released gases to a plasma,

and spectroscopically analyzing the emitted light for emissions at one or more wavelengths known to be characteristic of radon or iodine.

4,221,483

LASER BEAM LEVEL INSTRUMENT

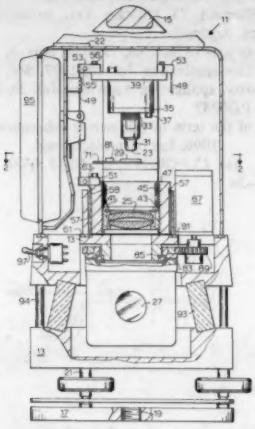
Joseph F. Rando, Cupertino, Calif., assignor to Spectra-Physics, Inc., Mountain View, Calif.

Filed Nov. 20, 1978, Ser. No. 962,198
Int. Cl.³ G01C *9/12*
U.S. Cl. 356—250 **21 Claims**

1. A laser beam level instrument of the kind used in surveying and comprising,

laser light generating means including a solid state light source for producing an intense beam of rapidly diverging laser light from the solid state light source, light from the

light source and for directing the collimated light beam downwardly in a truly vertical direction, and



rotatable mirror means for deflecting the vertically directed light beam substantially ninety degrees while swinging the deflected light in a horizontal plane.

4,221,484

SELECTION OF SPECTROPHOTOMETRIC OPERATING PARAMETERS

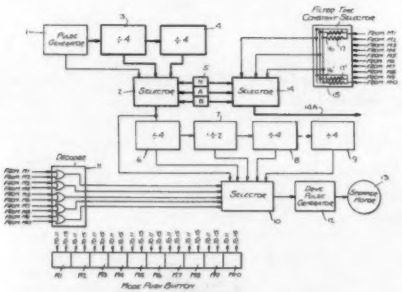
Henry M. Mould, Buckinghamshire, England, assignor to Perkin-Elmer Limited, Beaconsfield, England

Continuation-in-part of Ser. No. 721,989, Sep. 10, 1976, abandoned. This application Oct. 6, 1978, Ser. No. 949,319

Claims priority, application United Kingdom, Sep. 12, 1975, 37510/75

Int. Cl.[2] G01J *3/42*

U.S. Cl. 356—319 **11 Claims**



1. Spectrophotometric apparatus comprising an integrated mode system including user operable main mode selection stations for enabling any one desired combination of operating parameters out of a range of predetermined combinations equal in number to said stations and a mode multiplying system including user operable control means for modifying in response to the operative state of said control means each main mode combination selected, out of at least some of the combinations in said range, for converting the selected main mode combination into an auxiliary mode combination.

4,221,485

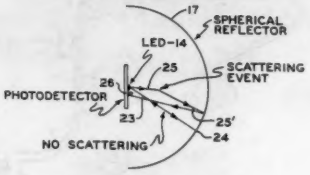
OPTICAL SMOKE DETECTOR

Richard G. Schulze, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 4, 1979, Ser. No. 45,025

Int. Cl.[3] G01N *21/01*

U.S. Cl. 356—338 **7 Claims**



1. Optical smoke detector apparatus comprising:

a smoke sensing chamber having air inlet and outlet means;

a light emitter;

an optical sensor in said chamber having a face comprising a light receiver, said light emitter being mounted on said sensor, said light receiver being of a relatively large area with respect to said light emitter;

spherical light reflector means mounted in said chamber such that the light emitter is located at the center of curvature of the spherical light reflector means;

the light being directed from said light emitter onto said light reflecting means and not onto said light receiver, whereby the light directed on said spherical light reflecting means is reflected back to said light emitter without falling on said light receiver;

and whereby in the presence of smoke in said chamber, light is scattered thereby, and falls on said light receiving portion to indicate the presence of said smoke.

4,221,486

INTERFEROMETRIC MEASUREMENT WITH λ/4 RESOLUTION

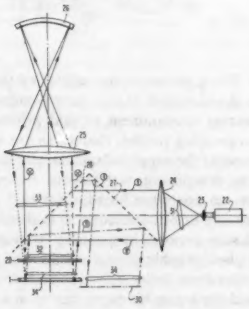
Walter Jaerisch, Boeblingen, and GUM/u/ enter Makosch, Sindelfingen, both of Fed. Rep. of Germany, assignors to Günter Makosch, Armonk, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,311

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758149

Int. Cl.[3] G01B *11/02*

U.S. Cl. 356—357 **9 Claims**



1. An inteferometric method with λ/4 resolution for distance, thickness, and/or flatness measuring, characterized in that a collimated, convergent or divergent radiation (S_0) is directed at a first angle of incidence (θ_1), or at a first range of angles of incidence onto an object (1) to be measured, that the

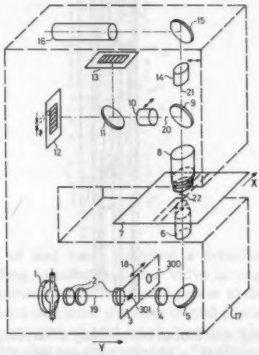
components (S_1, S_2) of the radiation (S_o) reflected from different surfaces or different parts of the object to be measured are superimposed to a new radiation (S'), with this new radiation redirected onto the object to be measured at a second angle of incidence (θ_2) differing from the first angle of incidence, or at a second range of angles of incidence differing from the first range, that the components (S_3, S_4) of this radiation reflected from different surfaces or parts of the object to be measured are brought into interference, and that the resulting interference fringe pattern is imaged for evaluation.

4,221,487

SYSTEM FOR TESTING A PATTERN RECORDED ON A PLATE

Michel Lacombat, and Serge Volmier-Desperques, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 20, 1979, Ser. No. 22,328
Claims priority, application France, Mar. 24, 1978, 78 08672
Int. Cl.³ G01B *11/00*; G06K *7/10*
U.S. Cl. 356—394 **10 Claims**



1. A system for testing a pattern recorded on a plate having two levels of modulation for a luminous analysis beam in relation to a reference pattern, the two patterns being decomposible into elementary rectangles forming lines parallel to a direction Y and following one another in a direction X perpendicular to Y, said system comprising:

a first analysis system for analyzing the pattern to be tested, comprising means for projecting said analysis beam to illuminate N successive rectangles of one and the same line on said plate, imaging means introducing a magnification G and detecting means comprising N aligned detecting cells respectively optically conjugated with said N rectangles in relation to the imaging means; said detecting means supplying a series of bits S relating to the level of modulation of the illuminated rectangles;

displacement means for relatively displacing said plate and said analysis system in said directions X and Y so as to effect a line-by-line analysis by bands of N rectangles width;

a second analysis system for supplying a series of bits Σ relating to the reference pattern described line-by-line by bands of N rectangles;

a first and second processing units for processing said bits S and Σ, respectively, which simultaneously supply selected signals relating to two homologous rectangles of the pattern to be tested and of the reference pattern and signals relating to adjacent rectangles respectively having a shift of at least one rectangle in one and the same line and a shift of at least one line in the direction Y;

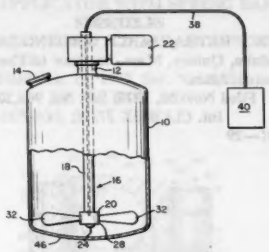
comparing means for comparing said selected signals and enabling any shifts of at least one rectangle and one line respectively in said directions X and Y between said two patterns to be determined and any recording errors in the pattern which cannot be attributed to a shift to be detected.

4,221,488

SEPARABLE BLADE AGITATOR AND METHOD AND MEANS FOR ASSEMBLY

Erwin J. Nunlist, Penfield; Howard G. Coleman, Naples, and Edward S. Harrison, Perinton, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,828
Int. Cl.³ B01F *13/00*
U.S. Cl. 366—343 **9 Claims**



1. A separable blade agitator comprising:

(a) a hollow metal shaft having a closed end;

(b) a corrosion resistant glass coating on the external surface of said shaft and over said closed end;

(c) a metal impeller fixed to said shaft adjacent said closed end, said impeller having a hub and at least one impeller blade extending outwardly from said hub, said hub having a bore therethrough;

(d) a corrosion resistant glass coating over the entire surface of said impeller including the surface defining the I.D. of said bore; and

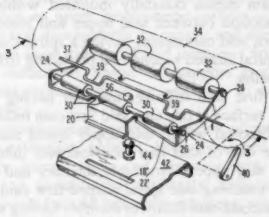
(e) said shaft closed end extending through said bore in a gasketless, glass-to-glass interference fitted connection.

4,221,489

SELF ALIGNING PAPER FEED ROLLER ASSEMBLY

Vencil D. Engle; Raymond M. Marowski; Edward E. Pollard, and John L. Pullen, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,942
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—636.3 **5 Claims**



1. A feed roll assembly for a printer having a cylindrical platen, comprising:

support means attached to said printer,

pivot means supported on said support means a fixed distance from said platen,

feed rolls supportively mounted on a shaft, a truck means for supporting said shaft, a plurality of said shafts supported

rotatively by said truck means with said shafts in a parallel relation to each other,

said truck means comprising a pivot bearing surface, said pivot bearing surface engaged to provide three degrees of rotational freedom with said pivot means, and deflectable about said pivot means,

release means engageable with said truck means for deflecting said truck means about said pivot means and away from said platen,

whereby said feed rolls will align parallel with the axis of said platen, when engaged with said platen and said truck means will rotate to equalize the forces between said feed rolls and said platen.

4,221,490

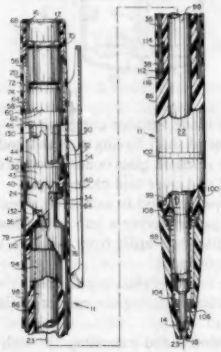
TWO ENDED RETRACTABLE WRITING INSTRUMENT

Curtis L. Malm, Quincy, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 30, 1978, Ser. No. 965,205

Int. Cl.[3] B43K *27/00, 24/02*

U.S. Cl. 401—29 **18 Claims**



1. A retractable writing instrument comprising:

barrel means having an open ended lower section coaxially assembled end-to-end with an open ended upper section so as to be rotatable about a longitudinal axis of said writing instrument;

a lower retractable member coaxially mounted within said lower barrel section to telescopically move in and out of said open end of said lower barrel section;

an upper retractable member coaxially mounted within said upper barrel section to telescopically move in and out of said open end of said upper barrel section;

tubular cam means coaxially mounted within said upper barrel section between said upper and lower retractable members, said cam means having a spiral shaped first end and a spiral shaped second end providing first and second spiral paths;

a tubular first cam follower member having a key and a bearing surface at one end, said first cam follower member being disposed within said upper barrel section with an opposite end of said first cam follower member bearing against said upper retractable member and said bearing surface touching said spiral shaped first cam end; and

a tubular second cam follower member having a keyway and a bearing surface at one end, said second cam follower member being disposed within said upper barrel section with an opposite end of said second cam follower member bearing against said lower retractable member, said opposite end of said second cam follower member being connected to said lower barrel section to rotate together with said second cam follower member bearing surface touching said spiral shaped second cam end and said key slidingly engaged in said keyway, whereby rotation of said lower barrel section about said writing instrument longitudinal axis relative to a stationary upper barrel section causes said first and second cam follower member to simultaneously rotate about said axis following said first and second spiral paths and said upper and lower retractable members to telescopically move in and out of said open ends of said upper and lower sections of said barrel means without rotating.

4,221,491

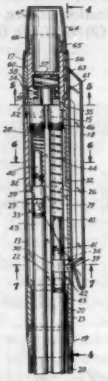
PEN CONSTRUCTION

Walter C. Ganz, New York, N.Y., assignor to Walgan Corp., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,885

Int. Cl.[2] B43K *27/12*

U.S. Cl. 401—33 **10 Claims**



1. A writing instrument comprising a barrel member having a front end opening, a writing element located in said barrel member and longitudinally movable between an advanced operable position projecting through said front opening and a retracted position and adjustable in response to a longitudinal compressive force thereon, means for limiting the forward movement of said writing element to a predetermined advanced position, a follower member coupled to said writing element rearwardly of the front end thereof, a cam member rotatably located on said barrel member and having a cam engaging said follower member and shaped whereby rotation of said cam member to a predetermined position advances said writing element by way of said follower member to said advanced operable position, and an actuating member carried by said cam member and longitudinally selectively movable along a path intercepting said follower member when said writing element is in its advanced position whereby the advance of said actuating member when said writing element is in its advanced position applies an adjusting compressive force to said writing element.

4,221,492

TOOTHBRUSH WITH BUILT-IN "SQUEEZABLE" VALVED TOOTHPASTE HOLDER

Lucio Boscardin, Camparda, Milan; Stefano Frustagli, Bresso, Milan, and Alfredo Veronese, Cinisello Balsamo, Milan, all of Italy

Filed Dec. 1, 1977, Ser. No. 856,360

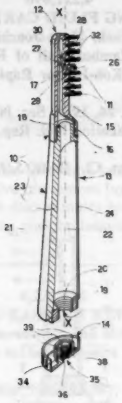
Claims priority, application Italy, Dec. 2, 1976, 30025 A/76; Dec. 2, 1976, 30026 A/76; Mar. 3, 1977, 20790 A/77

Int. Cl.[3] A46B *11/02*

U.S. Cl. 401—184 **9 Claims**

1. A device for cleaning teeth with the use of cleaning fluid media, comprising a brush section having a base and an inner

passage having a distributing aperture; an elongated container section bounding a hermetically closed inner chamber for accommodating a fluid medium and having an inlet end and an outlet end, said inner chamber communicating at said outlet end with said inner passage of said brush section, said container section having a wall which is sufficiently rigid in a longitudinal direction so that said container section can serve as a handle, and at the same time is sufficiently resiliently deformable in a transverse direction so that said container section can be squeezed to urge the fluid medium accommodated in said inner chamber to flow from the latter to said brush section; a rigid disk at said inlet end of said container section and defining a



filling opening of said inner chamber; a detachable cap for closing said filling opening; and one valve arranged to open when said container section is squeezed so as to discharge the fluid medium from said inner chamber of said container section into said inner passage of said brush portion whereafter the fluid medium discharges through said distributing aperture, said one valve having a semi-spherical valve member closing said distributing aperture from outside, a head portion fixed to said base of said brush portion, and a stem connecting said valve member to said head portion, said valve member, head portion and stem being of one-piece with each other with said stem extending through said distributing aperture.

4,221,493

PEN NIBS

William L. Cole, Camberley; Valerie A. Buckle, Slough, and Humphrey G. Bowden, Twickenham, all of England, assignors to Scripto, Inc., Doraville, Ga.

Filed Aug. 31, 1978, Ser. No. 938,371

Int. Cl.³ B43K 5/00

U.S. Cl. 401—199 **5 Claims**

1. A porous pen nib comprising a tubular sheath of an acetal copolymer and a porous core of bondable bulked continuous filaments, the sheath being rigid enough to withstand writing load, the rim of the mouth of the sheath at one end forming a firm annular boundary of a writing tip, the porous core presenting a protruding centre of the writing tip, the plastics sheath and the core being locked together against relative longitudinal displacement under writing load by penetration of the acetal polymer of the sheath into interstices of the core, the materials of the sheath and core wearing smoothly at given rates in writing use and the areas of the sheath and core presented at the writing tip being respectively such as to achieve substantially equal recession of the sheath and of the core by wear in writing use.

4,221,494

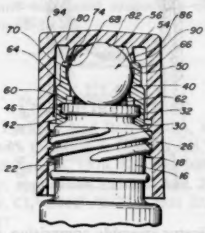
ROLL-ON APPLICATOR WITH SPRING BAR BALL SUPPORTS

Nicholas W. Kachur, Clark, N.J., assignor to W. Braun Company, Chicago, Ill.

Filed Jan. 11, 1979, Ser. No. 2,854

Int. Cl.³ B43K 9/00

U.S. Cl. 401—213 **2 Claims**



1. A liquid dispensing container comprising a hollow body, an externally threaded neck surmounting the body and terminating in a collar defining an opening for dispensing fluid material contained in said body, a cap threaded internally for intercoupling engagement with said threaded neck when affixed thereon as a closure for said container,

a generally tubular ball-holding fixture of a resilient, flexible, elastic composition sleevedly secured to the neck of said container, said fixture including an integrally formed circumambient internal annular channel opening radially inwardly and receiving the collar of said neck in snap-in engagement therewithin adjacent a lower open end of said fixture,

an applicator ball coaxial with and held in said fixture and projecting beyond an upper open end thereof,

an internal annular sealing surface integral with said fixture for engaging a lower hemispheric portion of said ball,

said cap being integrally formed with ball-contacting means for abutting an upper hemispheric surface of said ball to urge said ball downwardly to engage and stress said sealing surface upon closure of said container with said cap,

resiliently deflectable elastic ball-support means disposed below said sealing surface for engaging an under surface of said ball,

said ball support means comprising a pair of coplanar, horizontally extending, parallel, laterally-spaced spring bars integrally formed with and spanning said ball-holding fixture and constituting resiliently deflectable, elastic support cords for said ball resting thereon, said spring bars bridging said fixture at an elevation above said collar of said container,

said ball being carried on said support means to assume a position such that a bounding surface of said ball is displaced radially inwardly from said sealing surface to provide an annular fluid flow passage between said ball and said sealing surface when said cap is removed from said container,

said spring bars being responsive to downwardly directed

ball pressure applied thereagainst during closure of said container with said cap to undergo limited temporary resilient deformation as said ball is urged downwardly to engage and seat against said sealing surface of said fixture in fluid-tight engagement therewith, and

said spring bars constituting tensioning means biasing said ball upwardly of said sealing surface to elevate said ball to clear said sealing surface to permit fluid flow between said ball and said surface upon removal of said cap from said container.

4,221,495

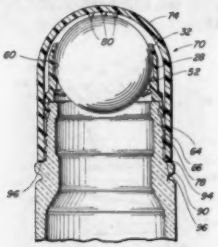
ROLL-ON APPLICATOR WITH SHARP SEALING RING

Morris Braun, Chicago, Ill., and George B. Spransy, Oconomowoc, Wis., assignors to W. Braun Company, Chicago, Ill.

Filed Jan. 29, 1979, Ser. No. 7,577

Int. Cl.³ B43K *9/00*

U.S. Cl. 401—213 **7 Claims**



1. A roll-on applicator assembly comprising, in combination, a container having an outlet end, a ball-type plastic fitment at the outlet end of said container and secured thereto at a mouth thereof, an applicator ball coaxial with and rotatably retained in said fitment, an upper portion of said ball projecting above said fitment and normally exposed when said applicator assembly is in use, a cap positionable as a cover for said fitment and attachable to said container as a closure therefor,

sealing ring means integrally formed with said fitment and defining an annular fluid-tight seating rib for said ball when said cap is applied to close said container,

said cap and said ball constituting, in cooperation with said sealing ring means on said fitment, means to prevent escape of fluid from said container upon closure thereof,

said sealing ring means being displaced below a horizontally extending diametric plane of said ball, and constituting a sharp ball-circumscribing rib formed at an intersection of a pair of angled, intersecting annular faces of said fitment projecting from and converging inwardly of a bounding internal wall portion of said fitment and defining a radially inwardly directed, tapered annular wedge terminating in a circumambient ball-encircling apex,

ball-support means for biasing said ball upwardly of and out of contact with said sealing ring means when said cap is removed from said container,

said ball-support means comprising ball engaging, resilient spring means supporting said ball at a lower end thereof,

said spring means being integrally formed with said fitment and extending interiorly therearound and projecting inwardly from said fitment, resiliently to urge said ball upwardly to clear said sealing ring means thereby to establish an annular fluid passage between said ball and said sealing ring means when said cap is removed from said container,

sealing lip means integrally formed with said fitment at an upper terminal portion thereof and embracing said applicator ball circumferentially therearound in fluid flow restricting engagement therewith to prevent uncontrolled discharge of fluid from said container when said cap is removed therefrom,

said cap being formed on an underside of a top wall thereof with a plurality of fingers disposed as an array oriented symmetrically with respect to a vertical axis of said container, said fingers extending downwardly from said cap interiorly thereof to engage an upper surface of said ball,

whereby when said cap is tightened in place on said container, said fingers press down upon and center said ball, urging said ball to displace said resilient ball support means and to shift said ball into fluid-tight sealing engagement with said sealing ring means to prevent escape of fluid from said container during periods of non-use.

4,221,496

WRITING FLUID CARTRIDGE

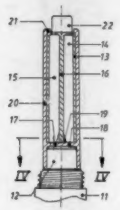
Gerold Anderka, Ellerbek; Hans-Joachim Ritter, and Werner Zuchner, both of Hamburg, all of Fed. Rep. of Germany, assignors to Mesne Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Nov. 24, 1978, Ser. No. 963,622

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752264

Int. Cl.³ B43K *5/10*

U.S. Cl. 401—258 **10 Claims**



1. In a writing fluid cartridge of the type having a connection section on its front end which is operable to be attached to a tubular writing pen, or the like, the improvement comprising a writing fluid compartment which is divided into at least two smaller sub-chambers, said cartridge further comprising means to enable each of said sub-chambers to be sealed off one from the other, wherein further one of said sub-chambers has a volumetric capacity which is substantially equal to the ink capacity of the writing pen to which it is operable to be attached, whereby one sub-chamber is operable to be initially put into a flow communication with said writing pen to completely fill said pen with writing fluid, thereupon said one sub-chamber is operable to be sealed off from said writing pen, and only a second sub-chamber then communicated to said writing pen to further supply writing fluid thereto, without air remaining within said one sub-chamber exerting any influence on said pen.

4,221,497

FITTING FOR MACHINES

Michael Farrell, Much Hadham, England, assignor to Casemasters (Herts & Essex) Limited, Hertfordshire, England

Continuation-in-part of Ser. No. 834,262, Sep. 19, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 941,766

Claims priority, application United Kingdom, Sep. 27, 1976, 40046/76

Int. Cl.² F16D *1/06*

U.S. Cl. 403—344 **15 Claims**

1. A boss for mounting on a shaft comprising in combination:

a discontinuous ring member;

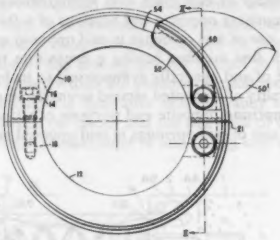
a tool operatively associated with the ring;

a link bridging the discontinuity;

a pivotable lever carried by the boss and movable through an over centre position into a rest position; and

an eccentric drive connection between the lever and the

link, the eccentric drive connection being attached to one end of said link and including non-eccentric portions with one opposed end on one side of the discontinuity including axially aligned bores with which the non-eccentric portions are rotatably received;



whereby pivoting of the lever into and out of the rest position produces relative movement between the link and at least one side of the discontinuity to alter the size thereof to facilitate clamping and unclamping of the boss on the shaft.

4,221,498

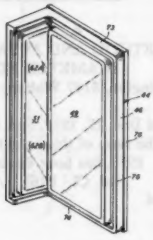
ROADSIDE BARRIER REFLECTOR

Arthur P. Schueler, Schaumburg, and Robert I. Nagel, Skokie, both of Ill., assignors to Astro Optics Corporation, Schaumburg, Ill.

Continuation-in-part of Ser. No. 856,967, Dec. 2, 1977, Pat. No. 4,123,181, which is a continuation of Ser. No. 876,174, Feb. 8, 1978, abandoned. This application May 7, 1979, Ser. No. 36,753

Int. Cl.[2] E01F *9/00*

U.S. Cl. 404—9 **14 Claims**



1. A reflector for improved roadside barrier marking comprising

(A) a backing member of integral, one piece, rigid construction having

(1) a flattened base portion, and

(2) an upstanding flattened leg portion along one edge of said base portion which is inclined in relation to said base portion at an acute angle ranging from about 60° to 85°, the faces of said base portion and said leg portion adjacent said acute angle being defined as inside faces, the area of said base portion being larger than the area of said leg portion,

(B) two molded transparent flattened bodies, each having a flattened outer face and an inner face with a plurality of cube corner type retroreflective units formed thereinto and further having an inturned peripheral shoulder which upstands beyond its associated inner face,

(1) one of said flattened bodies being larger than the other thereof and being adapted to fit against the inside face of said base portion with the edge portions of said shoulder thereof engaged thereagainst,

(2) the other of said flattened bodies being adapted to fit against the inside face of said leg portion with the edge portions of said shoulder thereof contacted thereagainst,

(3) the outer surface area of said one flattened body being from about 1.5 to 3.5 times greater than the outer surface area of said other flattened body,

(C) bonding means adhering such respective shoulder edge portions to said backing member at such locations of contact,

(D) said flattened bodies in combination with said backing member being adapted to retroreflect incident light rays striking said outer faces thereof within an included angle of at least about 60° but less than about 90° where 0° is taken along a hypothetical line which is generally parallel to the outer face of said one flattened body and which is generally perpendicular to the outer face of said other flattened body and where said included angle is measured vertically upwards from said 0° line and outwardly from the outer face of said one flattened body, and

(E) mounting means for mounting said reflector to a given support means with said respective outer faces being vertically oriented.

4,221,499

VIBRATORY DEVICE

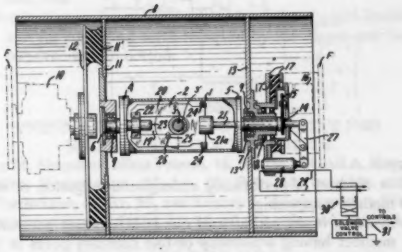
Claes Breitholz, Lyckeby, and Rolf Dahlin, Vällingby, both of Sweden, assignors to Dynapac Maskin AB, Solna, Sweden

Filed Apr. 28, 1978, Ser. No. 900,785

Claims priority, application Sweden, Apr. 29, 1977, 7705001

Int. Cl.[2] E01C *19/23;* **F16H** *33/10*

U.S. Cl. 404—117 **13 Claims**



1. A vibrational device including at least one mass element, a rotatable shaft, means connecting said mass element eccentrically to the rotatable shaft for pivotal movement about an axis substantially perpendicular to the rotatable shaft, means for pivoting the mass element about the pivotal axis as the rotatable shaft rotates, whereby upon pivotal movement of the mass element the centrifugal force on said element is altered to alter continuously the amplitude of vibration of the vibration device, said means connecting and said at least one mass element being constructed and arranged so that said pivotal axis is proximate or intersects the line along which the mass element centrifugal force resultant acts for any pivotal position of the mass element.

4,221,500

SYNTHETIC SEAWEED

William L. Garrett, 100 Dickinson La., West Park, Wilmington, Del. 19807

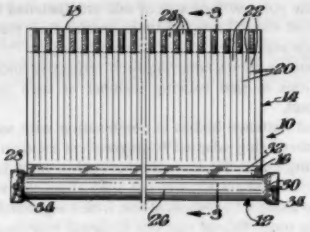
Filed Jan. 26, 1979, Ser. No. 6,567

Int. Cl.[2] E02B *3/04*

U.S. Cl. 405—24 **10 Claims**

1. Synthetic seaweed for use in inhibiting coastal erosion comprising an elongate anchor, a plurality of flexible strips

secured to the elongate anchor extending outwardly therefrom and terminating at free end portions, and buoyant tabs of foam



material secured to the exterior of at least the free end portions of at least some of the strips.

4,221,501

METHOD OF AND SYSTEM FOR UNDERGROUND IRRIGATION

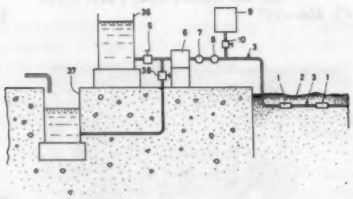
Kunio Saburi, Nagaokakyo, Japan, assignor to World Seiko Kabushiki Kaisha, Nagaokakyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,527

Claims priority, application Japan, Oct. 9, 1977, 52-125999; Oct. 19, 1977, 52-126000

Int. Cl.³ E02B *11/00*

U.S. Cl. 405—37 **4 Claims**



1. A method of performing undergound irrigation of soil, said method comprising:

embedding in the soil at least one hollow water permeable member having a plurality of fine capillary pores in the wall thereof;

providing a supply source of water maintained at a negative water pressure; and

connecting said supply source of water to the interior of said water permeable member, and permeating water through said capillary pores of said water permeable member into the surrounding soil by means of a pressure difference between said negative water pressure of said supply source and a lower negative pressure within said soil resulting from the degree of absorptivity of said soil.

4,221,502

CULVERT JOINT

Takayoshi Tanikawa, Zentsuji, Japan, assignor to Seibu Polymer Kasei Kabushiki Kaisha, Zentsuji, Japan

Filed Feb. 22, 1979, Ser. No. 13,921

Claims priority, application Japan, Feb. 28, 1978, 53-21524

Int. Cl.³ E01F *5/00*; F16L *27/00*

U.S. Cl. 405—126 **16 Claims**

1. A culvert joint comprising;

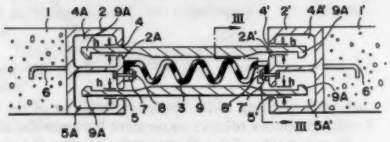
opposed anchor members secured respectively to the opposed ends of a culvert section to be joined together, said culvert having an inside and an outside, said anchor members comprising hollow boxes presenting a seat, said boxes each having openings at the inside and outside of said seat which communicate with separate cavities within said boxes,

a flexible member in the shape of a short tube,

means connecting said flexible member to said seats of said opposed anchor members for isolating the inside of the culvert from the outside,

a plurality of elongated first strengthening members each comprising opposite end portions of a thickness less than the size of said openings in said opposed anchor members, each first member having a projection thereon on each side of and generally symmetrical to its longitudinal axis,

a plurality of elongated second strengthening members each comprising opposite end portions of a thickness less than the size of said openings in said opposed anchor members,



each second member being elongated and having an opening therein on each side of and generally symmetrical to its longitudinal axis,

said first and second members extending along the inside and along the outside of said flexible member in alternate arrays with said ends of the members extending through said openings of the anchor members and being displaceable in said cavities,

said alternate arrays comprising alternate first and second members alternately overlapped, with a projection of each of said first members extending into an opening of the adjacent second member on each side of a first member to connect said members together for limited movement with respect to each other.

4,221,503

DRILLING METHOD AND APPARATUS FOR LARGE DIAMETER PIPE

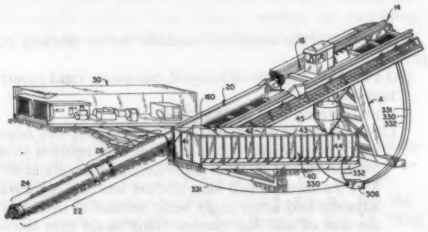
Martin D. Cherrington, 5147 Whitney Ave., Carmichael, Calif. 95608

Filed Dec. 15, 1977, Ser. No. 860,935

The portion of the term of this patent subsequent to Oct. 24, 1997, has been disclaimed.

Int. Cl.² F16L *1/02*

U.S. Cl. 405—184 **25 Claims**



1. A method for emplacing a casing beneath an obstacle between first and second locations at or near to ground level comprising the steps of: excavating a liquid-occupied passageway having a preselected diameter along an invert arcuate path under said obstacle between said locations; introducing a casing of lesser diameter than said passageway along said passageway; introducing and metering a transport fluid at the site of said excavating; entraining the cuttings from said excavating in the transport fluid; non-rotatably advancing said casing into and along the arcuate path of said passageway;

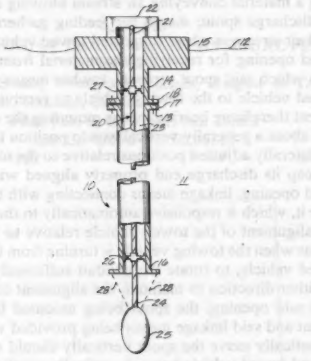
collecting and metering said transport fluid and entrained cuttings in the interior of the leading portion of said casing; evacuating the transport fluid and entrained cuttings under positive pressure from the interior of the leading portion of said casing to prevent the cuttings from settling in the ground circumscribing the advancing casing; maintaining the excess of collected transport fluid and entrained cuttings over introduced transport fluid to substantially equal the amount of soil formation displaced by said casing; sealing off the interior of said casing proximate the leading portion thereof to provide buoyancy to the casing within the passageway; and weighting the casing to substantially neutralize said buoyancy to minimize friction between the casing and the sidewalls of the passageway to facilitate advancement of said casing into the passageway.

4,221,504

STABILIZATION OF SUBSEA RISER PIPES HAVING FREE LOWER ENDS

Abraham Person, Los Alamitos, and Sherman B. Wetmore, Westminster, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Mar. 15, 1978, Ser. No. 886,907
Int. Cl.[2] E02B *1/00*
U.S. Cl. 405—303 **11 Claims**



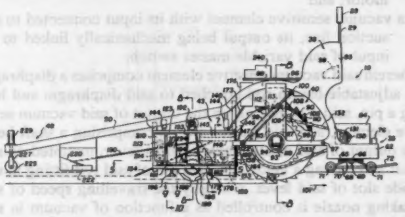
1. In an installation of an elongate, vertically disposed, flexible duct in an ocean and the like, the duct being adapted to be connected at its upper end to a duct support located above the duct upper end for carriage by the support duct of the immersed weight of the duct, the duct when connected to the support extending downwardly from the duct support to a lower end having no connection to the ocean floor and providing a path for flow of water through the duct from an open lower end thereof to the support, the improvement comprising apparatus for stabilizing the lateral position of the lower end of the duct relative to the duct support and comprising an elongate flexible tensile means disposed along the interior of the duct, the tensile means being connected at one end thereof to the duct structure, a weight of selected mass and size, the weight being connectable to the other end of the tensile means a selected distance below the lower end of the duct for support of the weight above the ocean floor by the tensile means, and positioning means connected between the tensile means and the duct at least adjacent the lower end of the duct for establishing and maintaining a selected position of the tensile means laterally relative to the duct.

4,221,505

SUB-SURFACE IRRIGATION CHANNEL

Ernest J. Taylor-Smith, 2905 W. 37th Ave., Vancouver, Bristish Columbia, Canada (V6N 2T8)

Filed Mar. 17, 1978, Ser. No. 887,535
Int. Cl.[2] E02D *3/04*; E02B *11/00*
U.S. Cl. 405—303 **38 Claims**



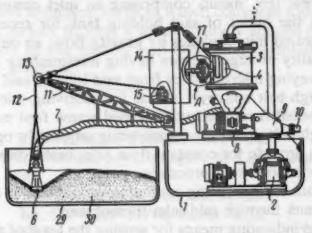
1. A vehicle for forming sub-surface channels, comprising:
a main frame to be moved over the ground,
a digger unit mounted on the frame and operable to remove earth from the ground to form a trench of a predetermined width with a bottom below ground level,
a channel-forming unit on the frame behind the digger unit with reference to the direction of movement of the main frame operable to form a system of channels in the bottom of the trench,
said channel-forming unit comprising a roller mounted to rotate around a substantially horizontal transverse axis, and a plurality of ribs radiating from the roller, said roller being mounted to roll over the bottom of the trench, during which time said ribs impress channels in said bottom, and
distributing means on the frame behind the channel-forming unit for spreading earth removed by the digger unit back over the trench bottom.

4,221,506

PNEUMATIC CONVEYING APPARATUS FOR RELOADING BULK MATERIALS

Max M. Shapunov, ulitsa Frunze, 16, kv. 15; Mikhail A. Koppel, ulitsa Vostochnaya, 22, kv. 18; Felix M. Frumkin, ulitsa Prazhskaya, 34, kv. 93, and Evgeny I. Zvenigorodsky, Vladimirsky prospekt, 11/10, kv. 15, all of Leningrad, U.S.S.R.

Filed Feb. 22, 1978, Ser. No. 880,063
Int. Cl.[2] B65G *53/66*
U.S. Cl. 406—30 **1 Claim**



1. A pneumatic conveying apparatus for reloading bulk materials, comprising:
a suction line for entraining said bulk materials;
an intaking nozzle of said suction line;
a settling chamber of said suction line, connected to said intaking nozzle;
a vacuum pump of said suction line, connected to said settling chamber;

a discharge means for discharging said bulk materials from said settling chamber;

a nozzle-transfer means for moving said nozzle;

a variable electric drive of said nozzle-transfer means;

a variable-speed electric motor of said variable electric drive;

a variable master switch means connected to said electric drive, for governing the rotational speed of said electric motor; and

a vacuum sensitive element with its input connected to said suction line, its output being mechanically linked to the input of said variable master switch;

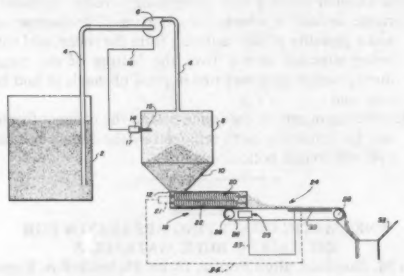
wherein said vacuum sensitive element comprises a diaphragm, an adjustable-length rod attached to said diaphragm and having a pin, said rod making up the output of said vacuum sensitive element, and said master switch comprising a shaft being the output of said master switch, and a lever, mounted on said shaft and having a guide slot, said pin of said rod fitting in said guide slot of said lever, whereby the travelling speed of said intaking nozzle is controlled as a function of vacuum in said suction line.

4,221,507

MICROBUBBLE FEEDING APPARATUS AND METHOD

Robert S. Olney, Bethlehem, Pa., assignor to Atlas Powder Company, Tamaqua, Pa.

Filed Nov. 4, 1977, Ser. No. 848,660
Int. Cl.[2] B65G *53/66*
U.S. Cl. 406—33 **10 Claims**



1. A feed apparatus for microbubbles comprising:

(a) a holding tank having an inlet and an outlet for retaining microbubbles delivered thereto in an aerated state for a residence time sufficient to provide a deaerated supply thereof to said outlet;

(b) screw feed means comprising an inlet communicating with the outlet of said holding tank for receiving said deaerated microbubbles by gravity flow, an outlet, and a plurality of auger screws having intermeshing flights for conveying microbubbles from said inlet to said outlet;

(c) weigh-belt conveyer means for receiving microbubbles deposited from the outlet of said screw feed means; said weigh-belt conveyor means being adjustably operable so as to provide for constant-flow rate, based on weight, of microbubbles to a processing point;

(d) means for delivering aerated microbubbles to said holding tank through said inlet thereof; and

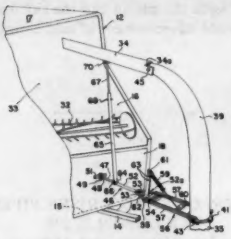
(e) level indicating means for sensing the level of microbubbles in said holding tank and operatively connected to with said means for delivering aerated microbubbles for maintaining the level of microbubbles in said holding tank at a level which provides sufficient residence time to allow deaeration of the microbubbles prior to delivery thereof to said screw feed means wherein said level indicating means comprises a tuning fork having at last two prongs electronically vibrated at the resonant frequency that occurs when essentially no microbubbles are located between the prongs of said tuning fork said frequency changing to another frequency when microbubbles are located between said prongs; means to sense the change in frequency.

4,221,508

CROP HARVESTER SPOUT CONTROL IMPROVEMENTS

Roger D. Haines, 5592 Kerswill Rd., Gladwin, Mich. 48624

Filed Jan. 4, 1979, Ser. No. 975
Int. Cl.[3] B65G *53/40*
U.S. Cl. 406—41 **6 Claims**



1. In a harvester system for forage material and the like: a wheel supported, towing vehicle with a blower discharge conduit extending vertically therefrom and terminating in a laterally rearwardly extending discharge spout; means for creating a material conveying air stream blowing out the end of the discharge spout; means for feeding gathered material into said air stream; a wheel supported towed vehicle having a front end opening for receiving the material from said spout and into which said spout projects; towbar means connecting the towed vehicle to the towing vehicle to receiving steering movement therefrom; bearing means mounting the conduit for rotation about a generally vertical axis to position the spout in various laterally adjusted positions relative to the towing vehicle to keep its discharge end properly aligned with the said front end opening; linkage means connecting with the conduit to rotate it, which is responsive automatically to the longitudinal non-alignment of the towed vehicle relative to the towing vehicle, as when the towing vehicle is turning from the track of the towed vehicle, to rotate the conduit sufficiently about its axis in either direction to maintain the alignment of the spout with the said opening; the spout being mounted for vertical movement and said linkage means being provided with means to automatically move the spout vertically should the towing vehicle and towed vehicle become vertically misaligned when proceeding across uneven ground.

4,221,509

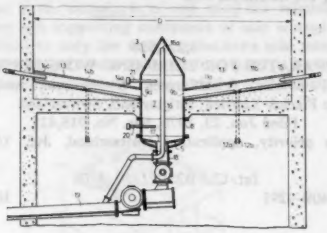
PNEUMATIC DISCHARGE OF FINE MATERIAL FROM A CONTAINER

Gerhard Balzau, Beckum; Günter Kompa, Lippstadt; Manfred Steinmann, Beckum, and Klaus Bode, Rheda-Wiedenbrück, all of Fed. Rep. of Germany, assignors to Polysius AG, Beckum, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,585
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744853
Int. Cl.[2] B65G *53/50, 69/06*
U.S. Cl. 406—91 **13 Claims**

1. In a container adapted to contain fine material for pneumatic discharge and having a bottom member provided with a centrally located opening; a housing occupying said opening and forming an aeratable chamber; a plurality of aeratable conveying channels overlying said bottom member in communication with and radiating outwardly from said chamber, each of said channels having a porous base inclined upwardly and outwardly from said chamber; a cover member overlying each

of said channels and having openings therein through which material may pass into such channel; and means for aerating said chamber and said channels; the improvement wherein said housing extends above and below said bottom member and has



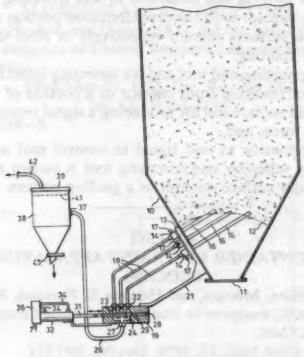
a closure at its upper end and a porous bottom provided with a discharge opening at its lower end, said housing closure being located at a level above that of said container bottom member and said housing bottom being located at a level below that of the base of each of said channels.

4,221,510

WITHDRAWAL OF PARTICULATE MATERIAL FROM A HOPPER

Kenneth C. Smith, Woodstock, Canada, assignor to Teledyne Canada Ltd., Rexdale, Canada

Filed Feb. 9, 1979, Ser. No. 10,951
Int. Cl.[2] B65G *53/38, 53/24*
U.S. Cl. 406—118 **9 Claims**



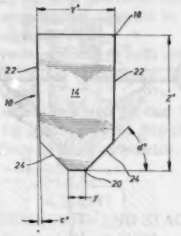
1. A particulate material-withdrawing attachment for connection on the side of a hopper, comprising a support member adapted to be attached on the side of the hopper, at least two hollow wands on said support member whereby the extent of each wand laterally from the support member can be adjusted, and a conduit connected to each wand, said conduits being connected in common to a main vacuum line through valving means interposed between each wand and a common separating means for separating the particulate material from entraining air, said valving means operating cyclically to selectively connect each of said wands in turn to said common separating means and vacuum line.

4,221,511

CARBIDE CUTTING TOOL

Larry S. Stefaa, Houston; Clarence A. Dearing, Jr., Alvin, and Frank R. Raney, South Houston, all of Tex., assignors to Strade Corporation, Houston, Tex.

Filed Dec. 1, 1978, Ser. No. 965,492
Int. Cl.[3] B26D *1/00*
U.S. Cl. 407—117 **6 Claims**



1. A cutting tool comprising:

an elongated body having;

an elongated essentially planar top locking surface for receiving pressure applied by a holder for a cutting operation,

a front face beveled so as to form a cutting edge at an intersecting line between said locking surface and said front face, the front face having an initial height on the order of about 5/16 inch and an initial width on the order of about 3/16 inch,

an exposed, bottom surface located in opposed parallel relationship to said top locking surface,

an exposed, terminal face disposed between said locking surface and said bottom surface and in opposed relationship to said front face,

first and second side surfaces disposed between said locking surface and said bottom surface and extending from said front face to said terminal face so as to converge toward both said terminal face and said bottom face such that the cutting edge is the widest portion of the cutting tool, wherein the side surfaces each converge toward said bottom surface at an angle of about 3° with a line perpendicular to the top locking surface, wherein the exposed terminal face is essentially perpendicular to the top locking surface, and wherein the side surfaces each converge toward the terminal face at an angle of about 1-¼° with a line perpendicular to the terminal face, and

the first and second side surfaces blending into a pair of respective alignment surfaces which converge toward the bottom surface to form a substantially V-shaped surface,

the entirety of the cutting tool consisting essentially of a carbide material.

4,221,512

VALVE SEAT FORMING TOOL

James L. Pool, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Filed Dec. 7, 1978, Ser. No. 967,291
Int. Cl.[3] B23B *51/00*; B23D *77/02*
U.S. Cl. 408—83.5 **22 Claims**

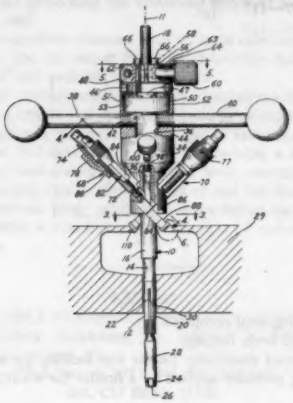
1. A valve seat facing tool comprising, in combination:

a pilot rod with a longitudinal axis and having a stem section at one end for positioning in a valve stem opening of an engine block, a cutter mounting assembly section extending longitudially from the stem section, an advance mechanism section at the opposite end;

a cutter advance assembly including a body rotatably mounted on the cutter mounting assembly section, said body including an advance mechanism means cooperative with the pilot rod advance mechanism section to advance

the body longitudinally along the axis of the pilot rod, and means for rotating the body;

at least one cutter blade subassembly slidably attached to the body and rotatable therewith, said cutter blade subassembly extending from one side of the axis to the other and including a blade holder with a cutting blade at one end on one side of the axis and means on the other side of the axis



for adjusting the position of the blade radially from the axis along a line through the axis, said means for adjusting including means connecting the body and the blade subassembly which means are manually operable to vary the relative position of the subassembly to the body, and;

means for retaining the cutter blade subassembly in a fixed position with respect to the body.

4,221,513

METHOD OF CONTINUOUSLY MACHINING SUPPORTS FOR ELECTROMAGNETIC WAVE GUIDES

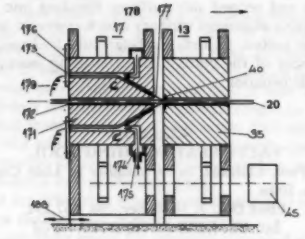
Gilles Dubois; Jean-Pierre Hulin, and Michel de Vecchis, all of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Cedex, France

Filed Jan. 3, 1979, Ser. No. 797

Claims priority, application France, Jan. 4, 1978, 78 00130; Jun. 13, 1978, 78 17678

Int. Cl.[2] B23C *3/13, 3/32*

U.S. Cl. 409—131 **5 Claims**



1. Continuous machining of helical grooves in a cylindrical smooth rod comprises the following steps:

supplying the rod from a storage reel,

guiding the rod along a preset direction,

removing chips resulting from machining by means of a rotating head bearing cutting blades passing alternately in front of ducts within said head into which the chips are forced by decompression of a compressed gas,

passing the rod through a cutting head rotating synchronously with said chip removing head comprising a thin sheet cutter with a chemically etched central cutting aperture,

guiding the rod along said preset direction,

driving the rod parallel to said direction and

storing the machined rod.

4,221,514

APPARATUS FOR TRIMMING WORKPIECES

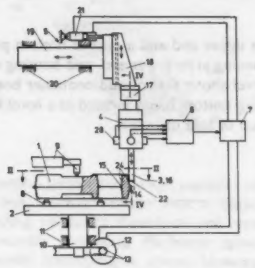
Rudolf Pavlovsky, Schaffhausen, Switzerland, assignor to George Fischer Limited, Switzerland, Switzerland

Filed Jun. 23, 1978, Ser. No. 918,421

Claims priority, application Switzerland, Jul. 11, 1977, 8551/77

Int. Cl.[2] B23D *1/30, 3/06*

U.S. Cl. 409—291 **10 Claims**



1. An apparatus for trimming a predetermined portion of a workpiece adjacent a major surface contour of the workpiece comprising

means for supporting the workpiece;

an elongated trimming tool having a transverse end surface defining a cutting edge at the distal end of the tool;

means for imparting repetitively reciprocating longitudinal cutting motion to said trimming tool;

means for moving said distal end of said trimming tool into cutting contact with the predetermined portion such that the side surfaces thereof repetitively contact the major surface contour;

means supporting said tool and for detecting lateral force on said tool resulting from contact of a portion of said tool with said surface and for producing a signal representative of said force; and

means responsive to said signal to control said means for moving, whereby said trimming tool is caused to follow said major surface contour as a guiding pattern.

4,221,515

DECK CONTAINER RESTRAINT APPARATUS AND PROCESS

James A. Brown, Moraga, and Herman E. Frentzel, Kentfield, both of Calif., assignors to Matson Navigation Company, San Francisco, Calif.

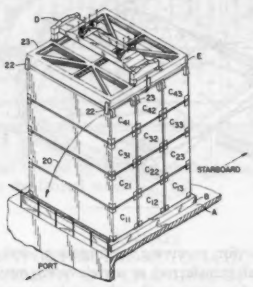
Filed Mar. 17, 1978, Ser. No. 887,571

Int. Cl.[3] B65G *1/14*

U.S. Cl. 410—32 **12 Claims**

1. A deck container restraint system for resisting static and dynamic loading forces on deck loaded discrete cargo containers resulting from at least the rolling motion of a ship at sea comprising: a plurality of at least nine cargo containers; said containers having at least a first tier of three immediately side by side containers resting on said deck; means on said deck for restraining at least side to side movement of said containers relative to said deck; said containers having at least a second tier of three immediately side by side containers resting on said first tier, each container on said second tier resting upon and vertically supported by a container at said first tier; means for

restraining at least side to side relative movement of the containers of said second tier relative to the underlying and supporting containers of said first tier on and attached to only the interface between said first and second tiers; said containers having a third tier of three immediately adjacent side by side containers; means for restraining at least side to side relative movement of the containers of said third tier relative to the underlying and supporting containers of said second tier on and attached to only the interface between said second and third tiers; means for restraining vertical relative movement of the containers of an overlying tier relative to the containers of



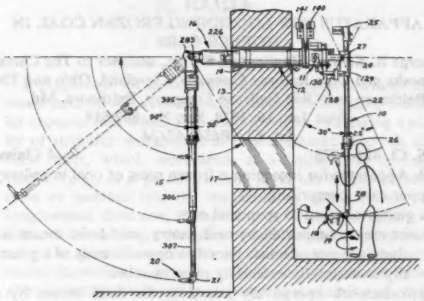
an underlying tier on one of said interfaces, and, an equalizer, placed over at least three of said side by side containers of said highest tier, said equalizer removably attachable to the upper portion of said highest tier of containers for attaching all said highest tier of containers together in fixed side-by-side relation for restraining side to side and vertical relative movement of at least one of said containers of said highest tier relative to all of the other containers of said highest tier, said equalizer on and attached only to the uppermost and highest tier of containers and said equalizer and said uppermost and highest tier of said containers having no vertically tied attachment to the deck.

4,221,516

MASTER-SLAVE MANIPULATOR

Lester W. Hanker, and Demetrius G. Jelatis, both of Red Wing, Minn., assignors to Central Research Laboratories, Inc., Red Wing, Minn.

Filed May 31, 1978, Ser. No. 911,232
Int. Cl.[2] B25J *3/00*
U.S. Cl. 414—5 **20 Claims**



1. A remote control master-slave manipulator for performing work on the opposite side of a barrier wall, said manipulator comprising a rotatable fixed horizontal support adapted to extend through said barrier wall, a longitudinally extensible master arm pivotally connected to one end of said horizontal support and rotatable therewith and a longitudinally extensible slave arm pivotally connected to the opposite end of said horizontal support and rotatable therewith, said manipulator characterized by:

(A) a first rotary element journaled for rotation within said horizontal support,

(B) linear motion transmission means responsive to manual squeezing motion of an operator extending from the master arm to said first rotary element to translate linear motion to rotary motion,

(C) a second rotary element journaled for rotation within said horizontal support and coupled to said first rotary element for rotation therewith,

(D) means operative in response to both rotary elements for transmitting tong motion through the horizontal support to the slave arm, and

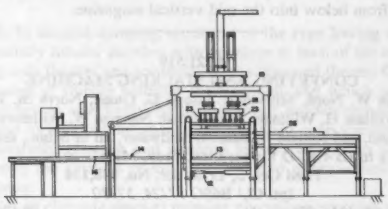
(E) power assist means coupled to said first and second rotary elements for controlling the grip closure and amplifying gripping force of the manipulator.

4,221,517

BRICK DEHACKER AND STACKER

Joseph A. Guzzetta, Newport Beach; William P. Osborn, Whittier, and Terance M. King, Placentia, all of Calif., assignors to AMI Industries, Inc., Downey, Calif.

Filed Mar. 3, 1978, Ser. No. 883,293
Int. Cl.[2] B65G *57/26*
U.S. Cl. 414—34 **11 Claims**



1. A dehacker for unloading brick from kiln cars or the like on which brick are stacked in arrays of spaced rows comprising a compacting table, a stacking platform, a gripper transfer operable to grip an array and to position said array on said compacting table, first means separate from said gripper transfer operable to close on opposite first side faces of an array on said compacting table to align the brick in a first direction, second means separate from said gripper transfer operable to close on the other opposed side faces of an array on said compacting table to align the brick in the other direction so that the brick in said array are aligned and abutting in lengthwise and lateral rows, and said second means also being operable to transfer compacted arrays directly from said compacting table to said stacking platform, at least some of said arrays including upper and lower courses with void rows in the upper course thereof, said second means being operable to transfer arrays containing void rows therein from said compacting table to said stacking platform by gripping the lower course of such array.

4,221,518

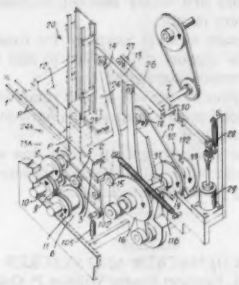
METHOD AND APPARATUS FOR STACKING AND TRANSFERRING PACKETS

Roberto Cavazza, Croce di Casalecchio di Reno, Italy, assignor to CIR - S.p.A. - Divisione Sasib, Bologna, Italy

Filed Feb. 14, 1979, Ser. No. 12,103
Claims priority, application Italy, Feb. 16, 1978, 12479 A/78
Int. Cl.[3] B65G *57/30*
U.S. Cl. 414—46 **5 Claims**

1. A method for forming a stack of a predetermined number "N" of packets by removing sidewise in horizontal direction a stack of "N" packets from a vertical magazine into which the

packets are fed the one superposed to the other, wherein the improvement resides in the fact that a number of "N+M" packets are fed, in a known manner, the one after the other from below into the said vertical magazine, and subsequently only the "N" packets which are located lowermost in the magazine are removed sidewise to obtain the desired stack of



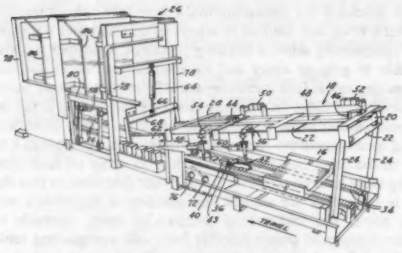
"N" packets, while the remaining "M" packets remain in the upper section of the magazine so as to build a packet reserve from which a number of "X" of lowermost packets is removed at the subsequent stack-forming operation, together with a number of "N−X" packets which in the meantime have been fed from below into the said vertical magazine.

4,221,519

CONVEYING AND STACKING MACHINE

Keith W. Nord, Stillwater; Joseph G. Quast, North St. Paul; William H. Williams, Maplewood; Naaman W. Willmore, St. Paul, and Ronald B. Benson, Stillwater, all of Minn., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 3, 1978, Ser. No. 948,134
Int. Cl.[3] B65G *57/24, 57/30*
U.S. Cl. 414—49 **10 Claims**



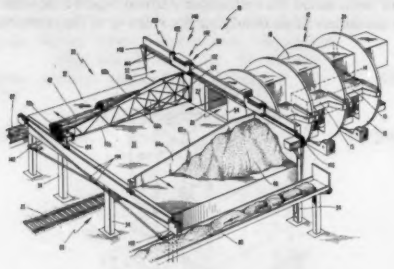
1. A conveying and stacking machine for handling basket trays and dollies, said machine comprising conveyor means adapted to receive and convey basket trays and dollies; holding means mounted at a predetermined converging angle above the entrance portion of said conveyor and adapted to receive dollies; an end portion pivotally connected to the downstream end of said holding means for at times pivotting into close proximity to said conveyor substantially along said predetermined angle; counting means for lowering said end portion and releasing a plurality of dollies from said holding means and lowered end portion onto said conveyor means once a predetermined number of basket trays has been conveyed; and stacking means for receiving said basket trays at a predetermined location along said conveyor means, automatically stacking said basket trays in a plurality of aligned stacks, and releasing said plurality of stacks onto said plurality of dollies, said conveyor means conveying the assembled basket tray and dolly stacks beyond said predetermined location.

4,221,520

APPARATUS FOR SUPPLYING WOOD FIBER MATERIAL TO A PULP PAPER PLANT THROUGH A SINGLE OFF-LOADING STATION

Thomas S. Bartley, Mobile, Ala., assignor to International Paper Company, New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,882
Int. Cl.[2] B65G *67/48*
U.S. Cl. 414—355 **9 Claims**



1. Apparatus for receiving, segregating, and temporarily storing material transferred at an elevated position from a receiver box of a rotary railroad car dumper, the material being one of at least two forms, the material also being expelled from the dumper along an unloading axis, the apparatus comprising:

(a) stationary platform means including

(i) a horizontally disposed planar deck member for supporting simultaneously the at least two different forms of material expelled,

(ii) means for supporting said deck member substantially at the elevation of the receiver box;

(b) means for coupling the receiver box to said platform means for guiding material being expelled onto said deck member;

(c) means cooperating with said platform means and said coupling means for plowing the expelled material along said deck member in a selectable one of a plurality of directions, the dimensions of the deck member in each of said plurality of directions being sufficient to store temporarily the segregated material.

4,221,521

APPARATUS FOR LOOSENING FROZEN COAL IN HOPPER CARS

George B. Kirwan, Huntington, W. Va., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio and The Baltimore and Ohio Railroad Company, Baltimore, Md.

Filed Jan. 16, 1978, Ser. No. 869,614
Int. Cl.[2] B65G *67/24*
U.S. Cl. 414—375 **4 Claims**

2. Apparatus for loosening a frozen mass of coal in railway hopper cars, comprising:

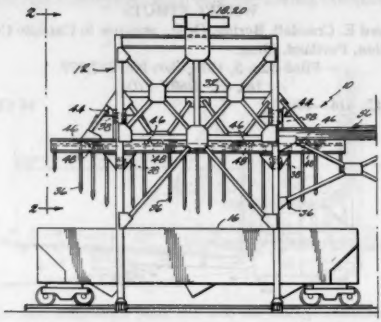
a gantry adapted to span said cars;

hoist means supported by said gantry, said hoist means including a pair of hoists joined to opposite ends of a generally horizontally extending plate member;

a framework operatively joined to the hoist means by a connecting link pivotally connected at one of its ends to said plate member at a location intermediate the ends of the member, and pivotally connected at its other end to the framework, said framework being vertically movable in response to operation of the hoist means;

a plurality of probes extending downwardly from said framework; and

shaker means supported by said framework and operative to impart vibratory movement to said probes as the frame-



work is lowered by the hoist means to cause the probes to engage the frozen mass.

4,221,522

APPARATUS FOR THE AUTOMATIC STEPWISE DISPLACEMENT AND CHANGING OF MAGAZINES

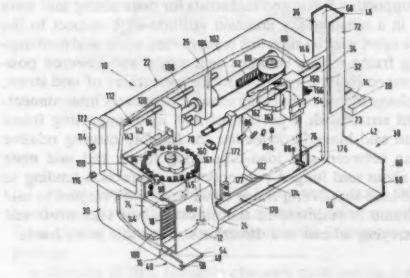
Johann Hoffmann, Freising; Richard Heim, Moosburg, and Georg Fischer, Freising, all of Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,335

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824787

Int. Cl.[2] B65B *61/00*

U.S. Cl. 414—417 **23 Claims**



1. Apparatus for automatic stepwise displacement of magazines, each of which comprises a magazine frame of rectangular cross-section which is formed for accommodating a plurality of strip-like workpieces at predetermined intervals above each other, which workpieces at a withdrawal or loading station lying at a predetermined level are to be withdrawn from or inserted into the magazine by displacement in the longitudinal direction, comprising a vertical magazine well means for receiving a plurality of said magazines lying on each other to permit movement of the magazines downwardly under the action of gravity; at least one stop means rotatable about a vertical axis and incorporating a plurality of supports disposed along a helical line at equal angular intervals, at least one said supports projecting into the path of movement of the magazines when disposed in the magazine well means, said supports arranged at equal vertical intervals which are equal to said interval between the workpieces in the magazines; and by stepping drive means for actuation on each step to rotate each stop means by an angle which corresponds to the angular interval of the supports along said helical line.

4,221,523

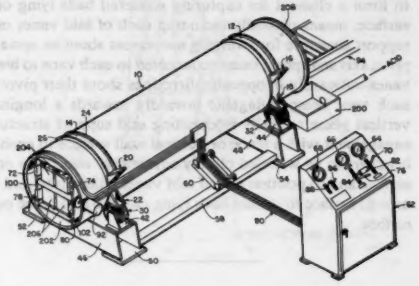
APPARATUS FOR DUMPING AND COLLECTING CORROSIVE SUBSTANCES FROM AUTOMOTIVE BATTERIES

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 894,349, Apr. 7, 1978, which is a continuation-in-part of Ser. No. 866,515, Jan. 3, 1978, which is a division of Ser. No. 669,216, Mar. 22, 1976, Pat. No. 4,081,093. This application Jun. 27, 1978, Ser. No. 919,490

Int. Cl.[2] B65G *65/34*

U.S. Cl. 414—421 **8 Claims**



1. In an acid-dumping apparatus of the type having a substantially tubular member with openings at each of the opposing ends thereof and conveyor means disposed therein for the passage of storage batteries therethrough, and which tubular member is selectively rotated through predetermined arcs about its longitudinal axis, an improvement in an assembly for selectively gripping said batteries introduced therein at least during the rotation of said member, said improvement comprising:

(a) an elongate support member pivotally connected to said tubular member along each edge of said conveyor;

(b) a tubular, elastic, acid-resistant envelope disposed around said member and supported by said support member along substantially the entire length thereof;

(c) means for sealing said tubular envelope at each end thereof in order to form an inflatible gripping member; and

(d) means for inflating and deflating said gripping members.

4,221,524

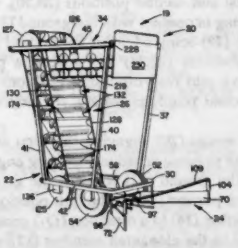
APPARATUS FOR RETRIEVING BALLS

Kenneth A. Morris, 12584 Caminito de la Gallarda, Rancho Bernardo, Calif. 92128

Continuation-in-part of Ser. No. 767,636, Feb. 10, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,646

Int. Cl.[2] B60P *1/36*

U.S. Cl. 414—439 **3 Claims**



1. A handcart for retrieving tennis balls lying on a ground or

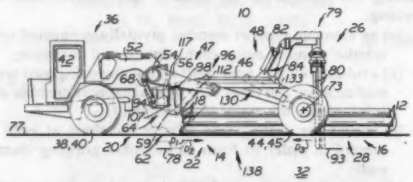
floor surface and comprising a support structure, a plurality of ground engaging wheels mounted on said support structure for enabling the handcart to be wheeled along said surface, a ball collection receptacle supported on said structure, means supported on said structure for picking up tennis balls lying on said surface and depositing the picked-up balls in said receptacle, means comprising a pair of diverging ball guide vanes carried by and projecting forwardly of said support structure for gathering and guiding scattered balls lying on said surface toward a region where they are picked up by said means for picking up the balls without lifting the balls off the ground, said ball guide vanes extending forwardly of said support structure to form a channel for capturing scattered balls lying on said surface, means pivotally mounting each of said vanes on said support structure for swinging movement about an upstanding pivot axis and spring means connected to each vane to bias said vanes outwardly in opposite directions about their pivot axes, each vane being swingable inwardly towards a longitudinal vertical plane medially intersecting said support structure by engagement with a fence or vertical wall surface to enable the handcart to be wheeled closely adjacent to said fence or wall surface and to position one of said vanes adjacent to said fence or wall surface to collect balls lying close to said fence or wall surface.

4,221,525

APPARATUS FOR TRANSPORTING ELONGATED MEMBERS

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 28, 1978, Ser. No. 937,398
Int. Cl.³ B60P *3/00*
U.S. Cl. 414—460 **31 Claims**



1. In an apparatus (10) for transporting an elongated member (12) between first and second locations, said elongated member (12) having first and second end portions (14,16), said apparatus (10) having first means (20) for controllably engaging said first end portion (14) in supporting relationship and controllably raising and lowering said first end portion (14) between first and second positions (22,24) and second means (26) for controllably engaging said second end portion (16) and controllably raising and lowering said second end portion (16) between first and second positions (28,30), said first end portion (14) being in contact with the ground (32) and said second end portion (16) being adjacent the ground (32) at the respective first positions (22,28) and spaced a preselected height (33,34) above said respective first positions (22,28) at the respective second positions (24,30), the improvement comprising:

said first means (20) engaging said first end portion (14) in response to being urged into digging engagement with and along the ground (32) between the ground (32) and said first end portion (14) at the first position (22) of said first end portion (14) in a direction (D_1) generally longitudinal relative to the elongated member (12); and

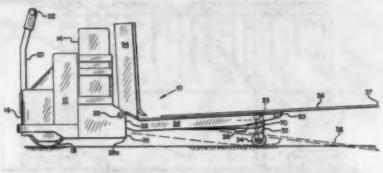
said second means (26) maintaining said first end portion (14) in supporting relationship with the first means (20).

4,221,526

WALKIE LOW-LIFT TRUCK WITH TILTABLE PLATEN AND REARWARDLY FOLDABLE LOAD-SUPPORTING WHEEL STRUTS

Richard E. Crandall, Boring, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Jun. 5, 1978, Ser. No. 912,177
Int. Cl.³ B60P *1/04*
U.S. Cl. 414—469 **14 Claims**



1. In a low-lift truck comprising a main frame having a drive-steer wheel and a drive motor for said wheel mounted thereon, a tiltable load-supporting frame having a laterally extending load-carrying surface pivotally connected to said main frame by a hinged connection such that said load-supporting frame articulates with respect to said main frame between a raised, generally horizontal position and a lowered position tilting downward from said main frame, and elongated load-supporting struts depending pivotally from said load-supporting frame having load-carrying wheels rotatably mounted at the depending ends thereof, the improvement which comprises powered means connected to said struts for selectively moving said struts between a substantially vertical position, in which said load-supporting frame is in said raised position, and a folded position wherein said load-supporting frame is in said lowered position and said load-carrying wheels are closer to said main frame than when said struts are in said vertical position, and linkage means interconnecting said main frame, said load-supporting frame and said struts for maintaining said main frame in a substantially constant attitude with respect to the surface upon which said truck is supported while said load-supporting frame moves between said raised and lowered positions respectively in response to the movement of said struts, said linkage means comprising means operatively interconnecting said struts with a portion of said load-supporting frame adjacent said hinged connection for forcibly causing relative pivoting between said load-supporting frame and said main frame about said hinged connection in a direction tending to tilt said load-supporting frame downward with respect to said main frame in response to the movement of said struts and load-carrying wheels in a direction toward said main frame.

4,221,527

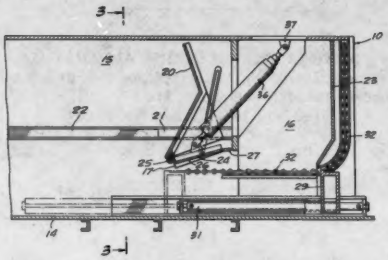
REFUSE TRUCK BODY

George W. Morrison, Seal Beach, Calif., assignor to Universal Truck Body, Inc., Los Angeles, Calif.

Filed Feb. 21, 1979, Ser. No. 13,033
Int. Cl.³ B65F *3/28*
U.S. Cl. 414—517 **6 Claims**

1. In a side loading refuse truck body, the combination of: walls and a floor forming a longitudinal storage chamber and a side loading compartment at the forward end thereof, an ejector guided for longitudinal movement in said storage chamber for ejecting refuse therefrom, said ejector in a forward position defining the rear boundary of the loading compartment, said ejector having a compactor plate movably mounted on the lower portion thereof, said compactor plate being movable between a first position in which a lower surface thereof is inclined downward away from said loading compartment to a second position adjacent the floor of the storage chamber, said ejector substantially filling the cross section of said storage chamber when the compactor plate is in its second position, means for moving the ejector to discharge refuse from said

storage chamber, and a pusher element in the lower portion of the loading compartment movable toward the storage chamber for moving a charge of refuse from the loading compartment



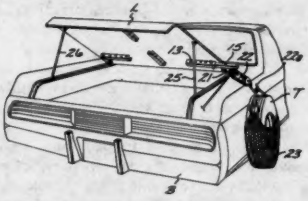
under said compactor plate and into the storage chamber, said compactor plate serving to compact the charge of refuse as it moves from the loading compartment into the storage chamber.

4,221,528

AUTOMOTIVE LIFTING DEVICE

Ambrose L. Gordos, 4301 E. 2nd St., Apt. 1E, Long Beach, Calif. 90803

Filed Jul. 9, 1979, Ser. No. 55,540
Int. Cl.³ B60R 9/06
U.S. Cl. 414—540 **8 Claims**



1. In an automobile having a frame and a trunk lid and a hood each pivotally mounted to articulate relative said frame for enclosing subjacent cavities therein the improvement comprising:

a plurality of first elongate channels each having a substantially hat shaped section attached to the underside of said lid in an alignment proximate the pivotal attachment thereof, each said first elongate channel being disposed towards the lateral edges of said lid to form first elongate passages therewith;

a plurality of second elongate channels disposed on the underside of said lid in substantially longitudinal alignment relative said frame to form second elongate passages therewith;

a hoisting bar conformed for selective telescopic insertion into said first or second passages, said bar including an eyelet at one end thereof;

pinning means insertable into said first or second channels and said bar for attaching said bar to a selected one of said channels at a predetermined level of telescopic insertion;

bracing means pivotally connected to said lid and manually deployable to engage said frame for opposing the closing articulation thereof; and

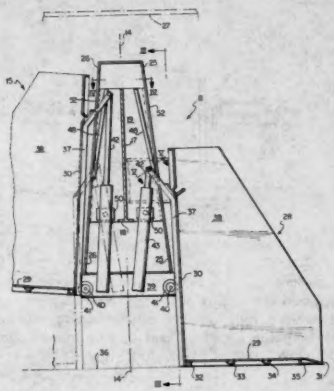
hoist means attachable to said eyelet for lifting articles from said automobile.

4,221,529

DELIVERY TRAILER

Al DeShano, 3693 Scott Ave., Shandon, Ohio 45063

Filed Apr. 28, 1978, Ser. No. 901,112
Int. Cl.² B60P 1/20
U.S. Cl. 414—546 **13 Claims**



1. A vehicle for transporting loads, comprising:

a rigid chassis;

a plurality of wheels mounted on said chassis to support said chassis above a roadway at a clearance height for rolling movement in a travel direction;

said chassis being elongated in the travel direction and having a central rigid rib running through a major portion of its length;

a plurality of roller guides secured to each side of said rib;

a plurality of load supports, each load support having two parallel columns respectively engaging said roller guides so that each load support is mounted for movement from a lower loading-unloading position immediately adjacent to the roadway to an upper storage position above the clearance height of said chassis;

a power mechanism for each of said load supports operatively mounted between said chassis and its load support for selectively driving said load support between its said upper and lower positions, each power mechanism comprising two parallel fluid rams each having a piston member and a cylinder member with one member pivotally connected directly to said rib and the other member pivotally connected about an axis directly to a respective one of said columns; and

a roller rotatably mounted about the pivotal connection of each column to its respective member, and a cam track fixedly mounted on said rib for engaging said roller during expansion and contraction of said fluid ram to control the positioning of the respective load support.

4,221,530

FORCE-MOMENT COMPENSATING APPARATUS

James M. Williams, IV, and James M. Williams, V, both of 503 W. Hillwood Dr., Nashville, Tenn. 37205

Filed Jun. 8, 1978, Ser. No. 913,824
Int. Cl.² B66F 9/22
U.S. Cl. 414—673 **9 Claims**

1. In a mobile load-handling apparatus having a frame subjected to changes in moments of force, a force-moment compensating apparatus comprising:

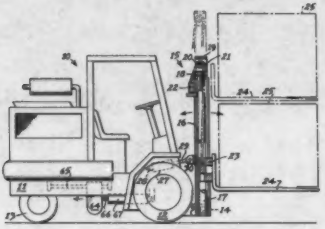
(a) motive means for moving said frame,

(b) speed-changing means for varying the speed of said motive means, in response to an electrical output signal,

(c) a translatory sensor for sensing the translatory position of a load on said frame handled by said apparatus, and for

producing a translatory signal commensurate with the sensed translatory position of said load,

(d) an angular sensor for sensing the angular position of said load, and for producing an angular signal commensurate with the sensed angular position of said load, and



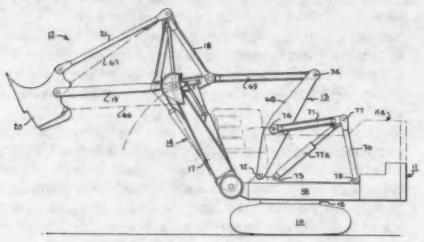
(e) an electrical speed control circuit receiving and integrating said translatory signal and said angular signal to produce an output signal to actuate said speed-change means to vary the speed of said motive means commensurate with the value of said output signal.

4,221,531

POWER SHOVEL HAVING IMPROVED FRONT END ASSEMBLY

George B. Baron; George J. Thompson, and Michael M. Palm, all of Marion, Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1978, Ser. No. 950,001
Int. Cl.[2] E02F 3/32
U.S. Cl. 414—694 **24 Claims**



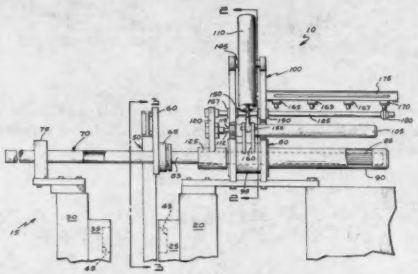
1. A power shovel comprising a support unit; a stiffleg operatively connected to said support unit for pivotal movement about a stiffleg pivot axis, said stiffleg comprising a pair of transversely spaced, longitudinally disposed side beams each having an I-shaped cross-sectional configuration including upper and lower flange portions and an interconnecting web portion, a cross-piece section interconnecting said side beam sections and a web section interconnecting the web portions of said side beam sections; a handle operatively connected to said stiffleg for pivotal movement about a handle pivot axis; a dipper mounted on said handle; a crowd system operatively connected to said handle for crowding and retracting said dipper; and a hoist system for hoisting and lowering said dipper comprising at least one upper fluid actuated rod and cylinder assembly operatively connected at a lower end thereof to said stiffleg and operatively connected at an upper end thereof to said handle on one side of said handle pivot axis, at least one lower fluid actuated rod and cylinder assembly operatively connected at a lower end thereof to said stiffleg and operatively connected at an upper end thereof to said handle on a side opposite to the operative connection of the upper end of said upper fluid actuated assembly and said handle, relative to said handle pivot axis, and means for selectively supplying fluid under pressure to opposite ends of said fluid actuated assemblies to effect an extension and retraction of the rods of said fluid actuated assemblies to correspondingly effect a pivotal movement of said handle about said handle pivot axis.

4,221,532

ARTICLE TRANSFERRING APPARATUS

Craig Vance, Woronoco, Mass., assignor to Automated Parts Remover, Inc., Indian Orchard, Mass.

Filed Nov. 16, 1977, Ser. No. 852,097
Int. Cl.[2] B65G 47/90
U.S. Cl. 414—729 **3 Claims**



1. Apparatus for removing a molded part from an injection molding machine which includes a pair of separable mold halves and depositing the part at a location remote from the injection molding machine, said apparatus comprising:

a shaft disposed parallel to the direction of parting of said mold halves, said shaft being longitudinally translatable and rotatable about the longitudinal axis thereof,

a sweep arm connected to and supported by said shaft,

part holding means carried by said sweep arm,

a rotatable hub engaging said shaft at a splined interconnection therewith for rotational movement with said shaft while allowing said shaft to move longitudinally with respect to said hub,

a first fluid motor connected to said shaft for imparting longitudinal movement thereto, thereby longitudinally positioning said sweep arm and said article holding means,

a second fluid motor connected to said rotatable hub for imparting rotational movement to said shaft thereby rotationally positioning said sweep arm and said article holding means and,

an upstanding mounting bracket, said rotatable hub and said first and second fluid motors being supported on said mounting bracket,

whereby said first and second fluid motors position said part holding means for engagement with a molded part retained within one of said mold halves, remove said molded part from said one mold half and deposit said molded part at said remote location.

4,221,533

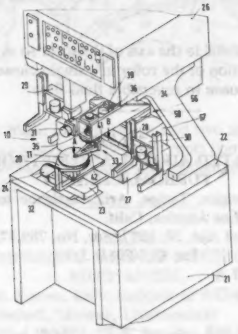
APPARATUS FOR TRANSFERRING OBJECTS

Richard Heim, Moosburg, and Georg Fischer, Inkofen, both of Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,336
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823360
Int. Cl.[3] B25J 9/00
U.S. Cl. 414—744 B **8 Claims**

1. Apparatus for transferring objects from a pickup station disposed on a base to which the objects are brough successively to a deposition station spaced therefrom on the base, comprising head means carrying a pickup means for movement

between two positions relative to a head support disposed on the base such that the pickup means is disposed in the first position at the pickup station and in the second position at the deposition station, said pickup means controllable to pick up an object disposed at the pickup station and release said object at the deposition station, controllable drive means for movement of the head between said two positions and a main control system for the control of the drive means and the pickup means in a working cycle in whose first halfcycle the pickup means is actuated at the pickup station for picking up the object and thereafter the drive means is actuated for moving the head



from the first position to the second position and in whose second half-cycle the pickup means is actuated for releasing the object at the deposition station and thereafter the drive means is actuated for moving the head from the second position into the first position, wherein the head support is adjustably displaceable relatively to the base parallel to the plane in which the movement of the head takes place and a control device means for automatically imparting a predetermined but variable displacement relative to the base to the head support during the first half-cycle to adjust the location of the pickup means when in the second position, and an opposite and equal displacement to the head support during the second half-cycle.

4,221,534

DEVICE FOR FEEDING TUBES FOR HEAT EXCHANGERS

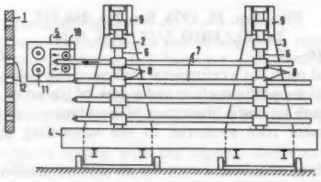
Alexander Rethy, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 836,975, Sep. 27, 1977, abandoned. This application Apr. 30, 1979, Ser. No. 34,436

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643632

Int. Cl.² B23P *15/26*; B65H *1/04*

U.S. Cl. 414—745 **7 Claims**



1. Device for feeding elongated tubes into a tube-insertion machine for heat exchangers such as steam condensers, especially, comprising a pair of lifting and wind-up devices mutually spaced horizontally and in horizontal alignment with the tube-insertion machine, a tube receptacle extending between and carried in common by said pair of lifting and wind-up devices, a pair of flexible belts formed, respectively, with a plurality of holders for tubes received in said receptacle for connecting the tubes to one another in mutually parallel disposition, said pair of flexible belts being respectively liftable so as to be vertically disposed and stepwise windable upwardly by said pair of lifting and wind-up devices so as to align the mutually parallel elongated tubes respectively with the tube-insertion machine whereby the tubes may be withdrawn by the tube-insertion machine from the respective holders.

4,221,535

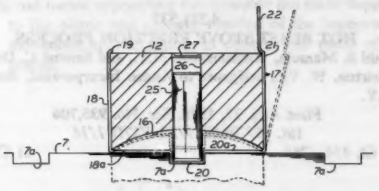
LATCH FOR LIFT TRUCK FORK

Russell C. Quinn, Twinsburg, Ohio, assignor to Jos. Dyson and Sons, Inc., Eastlake, Ohio

Filed Nov. 17, 1978, Ser. No. 961,551

Int. Cl.² B66F *9/14*

U.S. Cl. 414—785 **5 Claims**



1. A fork for fork lift truck, comprising a fork body, said body including a vertical arm member and a head at the upper end of the arm member, said head having a downwardly open transverse recess extending across the same, said recess being formed to receive a support rail carried by a fork lift truck and upon which the fork body may be shifted transversely, such rail having spaced notches therein, and latch means carried by the head aforesaid to maintain the body in position on the support rail, said latch means comprising a strap member carried by the head and extending along the recess, said member having a detent portion formed with a detent to engage a notch of the support rail, and means exterior of the recess forming a part of the strap member, to manipulate the detent out of notch engaging position to permit movement of the fork along such rail.

4,221,536

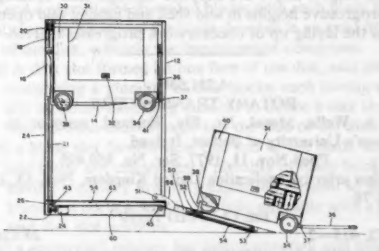
METHOD OF HANDLING BAGGAGE

William R. McFee, 3649 McKinley Ave., Las Vegas, Nev. 89121

Filed Jan. 9, 1978, Ser. No. 868,028

Int. Cl.² B60P *3/06*

U.S. Cl. 414—786 **2 Claims**



1. A method of transporting baggage from a first location to a plurality of remote locations utilizing apparatus having a plurality of cases secured on a trailer, each case having lift

means for elevating a capsule placed therein, comprising the steps:

(a) placing the baggage in selected ones of a plurality of mobile capsules,

(b) moving a first one of said selected mobile capsules into a first one of said cases,

(c) energizing the lift means for said first case whereby said first one of said mobile capsules is elevated within said first case by said lift means and supported thereby,

(d) moving a second one of said selected mobile capsules into said first case,

(e) repeating steps (b) - (d) for loading different selected ones of said plurality of mobile capsules in one or more of said other cases until the desired number of cases have been loaded with said mobile capsules, and

(f) moving said trailer successively to said plurality of remote locations, and removing one or more of said mobile capsules from a case at each successive location.

4,221,537

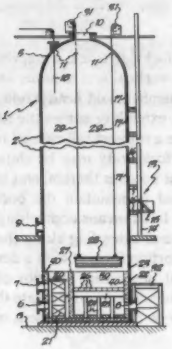
HOT BLAST STOVE ERECTION PROCESS

Ronald S. Mamula, Williamsville, N.Y., and Samuel C. Dotson, Weirton, W. Va., assignors to Andco Incorporated, Buffalo, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,706

Int. Cl.[2] B66B 9/20; F27D 1/16

U.S. Cl. 414—786 **11 Claims**



1. A process of erecting the refractory interior of a hot blast stove having a shell including the steps of:

a. lining part of said shell, and establishing a chamber wall within said shell to form a checker chamber, with brickwork laid up from a work scaffold vertically movable within said checker chamber; and

b. concurrently laying up checkerwork within said checker chamber beneath said movable scaffold, wherein materials for steps a and b are supplied through feed openings at progressive heights in said shell and closing said openings as the laying up of checkerwork progresses thereto.

4,221,538

ROTARY TRANSDUCERS

Alan A. Wells, Mepal, Nr. Ely, England, assignor to The Queen's University of Belfast, Ireland

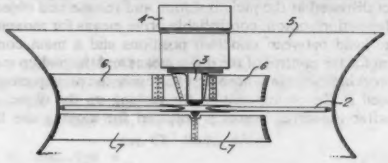
Filed Nov. 11, 1977, Ser. No. 850,498

Claims priority, application United Kingdom, Nov. 13, 1976, 47365/76

Int. Cl.[3] F01D 15/10

U.S. Cl. 415—2 **25 Claims**

1. Apparatus for extracting energy from a reversible fluid flow, comprising means supporting a rotary transducer in said flow, said transducer including a rotor having its axis parallel to the direction of fluid flow and being rotatable about said axis; a plurality of rotor blades extending radially from said rotor, each of said blades being of substantially symmetrical airfoil cross-section; and means rigidly mounting each of said blades on said rotor with the plane of zero lift of the blades



permanently normal to the axis of the rotor so as to provide for continuous rotation of the rotor in a single chosen direction of rotation in response to reversible fluid flow.

4,221,539

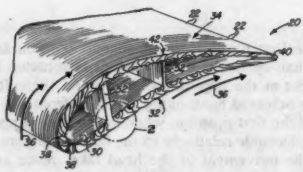
LAMINATED AIRFOIL AND METHOD FOR TURBOMACHINERY

Charles E. Corrigan, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 20, 1977, Ser. No. 789,371

Int. Cl.[2] F01D 5/18

U.S. Cl. 416—97 A **16 Claims**



1. An airfoil for use in turbomachinery comprising a plurality of thin, stacked laminae bonded together to form a major portion of said airfoil and a major portion of an external surface of the airfoil adapted to be arranged in momentum exchange relationship with the major fluid past said airfoil; each lamina of a set of said laminae having internal recesses therein defining internal cooling passages within said airfoil, and defining upstream and downstream exhaust ports opening onto said external surface at locations spaced chordwise along said external surface, said upstream exhaust port of each lamina configured to extend downstream in a chordwise direction along said external surface a sufficient distance to intercept the associated downstream exhaust port.

4,221,540

BLADED ROTOR FOR A CENTRIPETAL TURBINE

Giovanni F. Savonuzzi, Strada S. Brigida 44, Moncalieri (Turin), Italy

Filed Sep. 28, 1978, Ser. No. 946,917

Int. Cl.[3] F01D 5/18, 5/28, 5/30

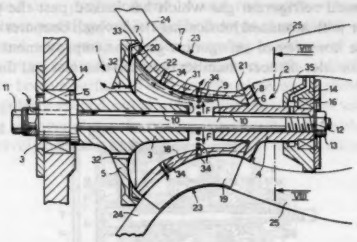
U.S. Cl. 416—97 R **16 Claims**

1. Bladed rotor for a centripetal turbine of the type comprising: a metal support structure and a row of blades of ceramic material, each having a blade part of aerodynamic profile and an attachment root anchored to the supporting structure, wherein:

each blade attachment root has an arcuate profile with an arcuate median line which is convex towards the axis of rotation of the rotor, the root having end surfaces which are substantially perpendicular to said median line,

the supporting structure comprises two axially spaced apart axially displaceable supporting elements, said supporting elements having annular supporting surfaces coaxial with the axis of the rotor, between which the blades are

interposed with the blade root end surfaces in contact with said two supporting surfaces, and means for drawing the two supporting elements axially towards each other to



clamp the blade roots between said two annular supporting surfaces so as to apply to the roots compressive forces directed substantially along said median lines of the blade root profiles.

4,221,541

FAN COMPRISING A BLADE PITCH CONTROL MECHANISM

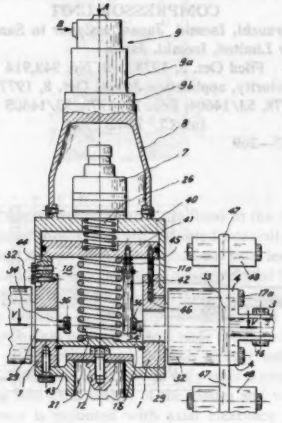
Emilio Bianchi, Varese, Italy, assignor to AXIAL International Aktiengesellschaft, Mauren, Liechtenstein

Filed Feb. 23, 1978, Ser. No. 880,383

Claims priority, application Italy, Feb. 28, 1977, 20752 A/77; Feb. 21, 1978, 20483 A/78

Int. Cl.[3] F04D *29/36*

U.S. Cl. 416—157 R **10 Claims**



1. In a fan comprising

(a) an impeller including a hub arranged for rotation about an axis of rotation and having a polygonal base and a plurality of sides,

(b) support shafts affixed to the sides of the hub for rotation therewith and extending at an angle with respect to the axis,

(c) supports coaxial with the support shafts and rotatably mounted thereon,

(d) fan blades mounted on the rotatable supports whereby rotation of the supports varies the pitch of the blades, and

(e) a mechanism for controlling the pitch of the blades during rotation of the impeller: the pitch control mechanism including

(1) a cylinder-piston unit mounted coaxially on the hub, the cylinder being axially stationary and the piston being axially movable in the cylinder and dividing the cylinder into two chambers,

(2) a first axially stationary conduit means arranged to deliver compressed air to one of the cylinder chambers for moving the piston axially into an operating direction,

(3) a normally closed valve in the first conduit means for preventing delivery of the compressed air to the one cylinder chamber,

(4) a spring in the other cylinder chamber biasing the piston in a direction opposite to the operating direction,

(5) a second axially stationary conduit means arranged to deliver an environmentally controlled flow of compressed air to the valve for opening the valve under predetermined environmental conditions whereby the compressed air in the first conduit means is deliverered to the one cylinder chamber and moves the piston in the operating direction against the bias of the spring, and

(6) rod means connecting the rotatable fan blade supports to the piston and causing rotation of the supports on movement of the piston to control the pitch of the blades.

4,221,542

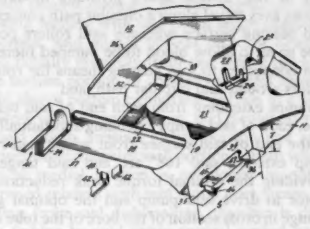
SEGMENTED BLADE RETAINER

Ronald C. Acres, Hamilton; Robert D. Gravitt, and Robert H. Roth, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 27, 1977, Ser. No. 864,950

Int. Cl.[2] F01D *5/32*

U.S. Cl. 416—220 R **11 Claims**



1. An improved blade retention system of the type having a disk and a plurality of shrouded blades with each blade having a radial spacer to secure the blade dovetail in an axial dovetail slot of the disk, wherein the improvement comprises:

(a) A disk slot formed on one face of the disk, said disk slot comprising a plurality of disk hooks, each having a radially inwardly extending element to define a disk slot portion between that element and the face of the disk;

(b) a blade slot formed near one end of the blade dovetail, said blade slot comprising a plurality of blade hooks each having a radially inwardly extending element to define a blade slot portion which is axially alignable with a pair of said disk slot portions;

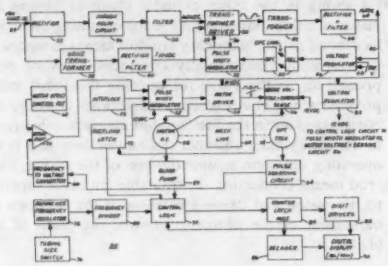
(c) a segmented retainer bar interconnecting said blade slot portion and said pair of disk slot portions to maintain their relative axial alignment; and

(d) means for retaining said retainer bar in its interconnecting position.

4,221,543
BLOOM PUMP SYSTEM

Louis C. Cosentino, Wayzata; Bill H. Niemi, Brooklyn Park; John P. Silbernagel, Spring Lake Park, and Jamshed R. Cooper, Golden Valley, all of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Nov. 7, 1977, Ser. No. 849,338
Int. Cl.[3] F04B *49/06*; A61M *5/00*
U.S. Cl. 417—22 **27 Claims**



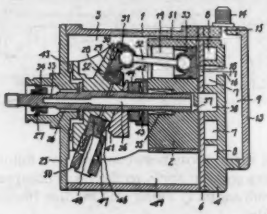
1. A blood pump system comprising:
a roller pump for pumping blood through a flexible tube;
a low voltage D.C. motor having an output shaft;
an electrical control circuit for applying necessary voltage for driving said motor at a predetermined speed;
gearing means connecting the output shaft of said motor to drive said roller pump;
means coupled to said motor for controlling the speed of said motor;
means connected to said coupled means for determining the blood flow rate being pumped through the tube by said pump;
means for visually displaying a digital readout of said flow rate; wherein said roller pump includes:
an arcuate bearing surface defining an arc of approximately 168° adapted to carry a flexible tube through which blood may pass;
a pair of 180° spaced apart, pivotally mounted rollers whose axes travel along a circular path concentric with said bearing surface whereby said rollers occlude the tube so as to allow blood to be pumped therethrough;
means connected to said gearing means for rotating said rollers around said circular path; and
lead ramps extending from each end of said bearing surface, each of said ramps extending substantially tangent to the end of said surface from which said respective ramp extends, said 168° arc and said tangent ramps providing the optimal torque peak reduction for said motor to drive said pump and the optimal graduated change in cross section of the bore of the tube as each of said rollers approach and recede from the points of occlusion of the tube.

4,221,544
REFRIGERANT COMPRESSOR

Motomu Ohta, Sakai, Japan, assignor to Central Automotive Industries Ltd., Sakai, Japan

Filed Jan. 3, 1978, Ser. No. 866,777
Claims priority, application Japan, Aug. 12, 1977, 52-9205
Int. Cl.[2] F04B *1/14*
U.S. Cl. 417—269 **10 Claims**

1. In a refrigerant compressor having a rotor chamber containing an oscillating plate driven by a rotor body secured to a rotatable shaft, the oscillating plate being coupled to a piston to produce reciprocation thereof in a cylinder to provide successive advance and retraction strokes, the compressor further having an inlet for fresh refrigerant gas to be compressed, an outlet for compressed refrigerant gas, an inlet for receiving refrigerant gas from the inlet for supply to the cylinder and an exhaust chamber for discharge of compressed refrigerant gas from the cylinder to said outlet, a sump containing lubricating fluid in the rotor chamber adapted for being stirred to effect lubrication in the rotor chamber, a passage being provided between the rotor chamber and the inlet chamber for return of compressed refrigerant gas which has leaked past the piston together with atomized lubricating fluid which becomes mixed with the compressed refrigerant gas, the improvement comprising an inlet silencer chamber between the inlet and the inlet

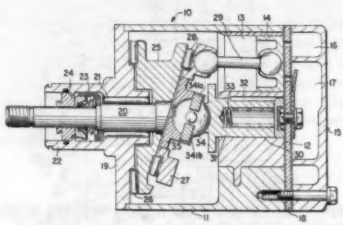


chamber, an exhaust silencer chamber between the exhaust chamber and the outlet, means for separating lubricating fluid from compressed gas in said exhaust silencer chamber, a sump chamber communicating with the exhaust silencer chamber for receiving separated lubricating fluid with compressed refrigerant gas, and means for returning the separated lubricating fluid to the rotor chamber under the action of said compressed refrigerant gas.

4,221,545
SUPPORT MECHANISM OF A WOBBLE PLATE IN A COMPRESSOR UNIT

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Filed Oct. 5, 1978, Ser. No. 948,914
Claims priority, application Japan, Oct. 8, 1977, 52/121291; Feb. 10, 1978, 53/14604; Feb. 10, 1978, 53/14605
Int. Cl.[3] F04B *1/14*
U.S. Cl. 417—269 **4 Claims**



1. In a compressor unit including a cylinder block having an axial center bore and a plurality of cylinder bores axially formed therein around the center bore, a plurality of piston means including piston rods respectively slidably fitted within said cylinder bores to compress fluid within the cylinder bores by the reciprocating motion thereof, a cam rotor disposed to rotate on an extension of the center axis of said cylinder block, and a wobble plate connected to said piston rods, said wobble plate being disposed on a surface of said cam rotor and supported on said cylinder block to convert rotating motion of said cam rotor to reciprocating motion to be imparted to said piston means; the improvement which comprises: a rod member axially slidably but non-rotatably fitted in said center bore of said cylinder block and elastically urged toward said wobble plate, said wobble plate having a hollow portion at a central portion thereof in an end surface thereof facing said cylinder

block, a spherical concave bottom surface of said hollow portion and a plurality of equiangularly spaced first recesses formed in the inner surface of the hollow portion at the opening edge thereof, a member for supporting said wobble plate supported on a projected end of said rod member from said center bore and disposed in said hollow portion of said wobble plate, said supporting member including a spherical convex surface at an end portion in close contact with said spherical concave bottom surface of said wobble plate, and a plurality of equiangularly spaced radial projections mounted on said supporting member about the center axis of said rod member and respectively disposed in said first recesses of said wobble plate.

4,221,546
AXIAL FAN

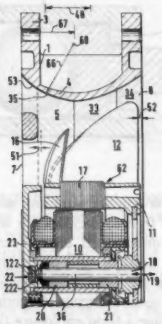
Georg Papst; Volker Schlicker, both of St. Georgen, and Günter Wrobel, Villingen, all of Fed. Rep. of Germany, assignors to Pabst-Motoren KG, Fed. Rep. of Germany

Continuation of Ser. No. 633,117, Nov. 18, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 851,430

Claims priority, application Switzerland, Nov. 18, 1974, 015298/74

Int. Cl.² F04D *25/08, 29/44*

U.S. Cl. 417—354 **30 Claims**



1. An axial fan whose fan blades are fixed to the rotor of an electrical driving motor and are mounted coaxially within a pipe section and extend over at least half the axial length of the said pipe section, whereby the flow channel formed by the pipe section is constricted from a wide suction side inlet to a necked-down portion in the flow direction and from this necked-down portion is widened to a wide pressure side outlet, wherein the said necked-down portion closely embraces the periphery of the blades and extends only over a small fraction of the suction side axial length of the blades and wherein the shaft of a rotor is mounted with axial clearance in bearing means and is supported on the suction side on a punctiform bearing arranged centrally in flange means and wherein the flange means is fixed with spokes to the suction side edge of the pipe section, the said spokes spanning the annular axial surface of projection of the blades hollowed out by the flange means in an inclined manner relative to the suction side edges of the blades and specifically with such an orientation of the inclined position that the axial projection of the intersection points of the spokes with the edges is displaced outwardly in operation;

wherein the outlet of the flow channel is bounded by a polygonal contour, in whose corner areas the outlet end portion of the flow channel projects over the circular periphery circumscribed by the polygonal contour and the outlet cross-section of the flow channel is bounded in the corner areas by segments of a surface of revolution coaxial to the rotor axis.

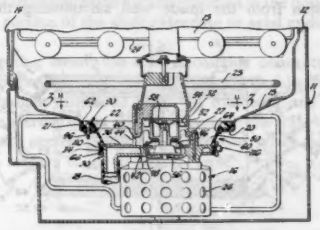
4,221,547
RESILIENT MOUNT FOR DISHWASHER MOTOR AND PUMP ASSEMBLY

Robert E. Hoffman; Timothy J. Skinner, and James M. Wooley, all of Dayton, Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 18, 1978, Ser. No. 943,137

Int. Cl.² F04B *21/00*

U.S. Cl. 417—363 **1 Claim**



1. In a domestic dishwasher including casing means forming a dishwashing chamber having an opening in the bottom thereof defined by a radially inwardly directed annular flange, mounting means resiliently suspending a motor-pump assembly in said bottom opening from said annular flange, housing means for the pump of said assembly, said pump housing means including a vertically extending upper small diameter wall portion and a vertically extending lower larger diameter wall portion separated by a substantially horizontal planar portion, said pump housing upper wall portion having pump inlet means located therein, the improvement wherein; said mounting means including a one-piece elastomer sleeve positioned between said pump housing means and said bottom opening, said one-piece sleeve formed by a large diameter radially outwardly directed top gasket portion, a frustoconical medial portion and a smaller diameter bottom cylindrical portion; means sealingly retaining said top gasket portion in nested overlying relation with said annular flange, means sealingly retaining said smaller diameter bottom cylindrical portion in circumscribing relation with said pump larger diameter lower housing portion, said medial portion tapering axially downwardly and radially inwardly from said sleeve top portion to said sleeve bottom portion to coaxially connect same so as to dispose said sleeve bottom cylindrical portion at a substantial distance below said bottom opening, said medial portion defining with said pump housing planar portion and said pump housing upper small diameter wall portion a sump wherein said frusto-conical medial portion is positioned in outer radial spaced opposed relation with said pump inlet means, whereby water exiting from said dishwashing chamber is directed in funnel-like fashion by said frusto-conical medial portion and said pump housing planar portion in substantially uninterrupted flow through said sump into said pump inlet means, and said sleeve medial portion being of uniform thickness substantially one-half the thickness of said sleeve top and bottom portions, whereby said sleeve medial portion being free to flex allowing said motor-pump assembly to move in directions coaxially, laterally and torsionally with respect to a vertical axis in said dishwasher so as to substantially obviate the transmission of vibrational energy from said motor-pump assembly to said dishwasher casing means.

4,221,548
DUAL ACTION SOLENOID PUMP

Frank W. Child, Eagle Bend, Minn. 56446

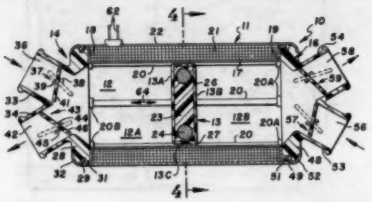
Filed Mar. 20, 1978, Ser. No. 890,583

Int. Cl.² F04B *17/04*

U.S. Cl. 417—418 **55 Claims**

1. A pump for moving a fluid comprising: a body having first and second ends and a chamber open to said ends, said body

having an inside wall surrounding the chamber, said wall having a plurality of longitudinal inwardly directed ribs, a first end member mounted on the first end of the body, a second end member mounted on the second end of the body, each of said end members having fluid inlet and fluid outlet passages, one-way inlet valve means in the inlet passages to control the flow of fluid into the opposite ends of the chamber, one-way outlet valve means in the outlet passages to control the flow of fluid out of the opposite ends of the chamber, a piston located in the chamber, said ribs being engageable with the piston to space the piston from the inside wall surrounding the chamber



whereby a limited amount of fluid flows around the piston when the piston moves in the chamber, said piston being free to move in said chamber between the first and second end members, said piston including magnetic material, solenoid means for establishing sequential reverse magnetic force, and control means connected to the solenoid means to provide electric energy to energize the solenoid means whereby the sequential reverse magnetic force of the solenoid means acting on the magnetic material reciprocates the piston in the chamber, thereby moving fluid into and out of the opposite ends of the chamber through the inlet and outlet passages.

4,221,549

INERTIA BAR FOR SUCKER RODS

Michael L. Rizzone, and Walter S. Secrist, both of Dallas, Tex., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 665,845, Mar. 11, 1976, abandoned, which is a continuation of Ser. No. 216,401, Jan. 10, 1972, abandoned. This application Oct. 12, 1976, Ser. No. 731,596

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—437 **2 Claims**

1. A combination comprising a string of sucker rods having threaded pins at their ends, couplings of like construction engaging said pins and joining the rods end-to-end, a subsurface pump, a string of inertia bars connected between the lowermost sucker rod and said pump for adding weight to the sucker rods and maintaining them in tension throughout a pumping cycle, and couplings of similar construction to said first-named couplings joining said inertia bars end-to-end;

each of said inertia bars comprising:

an elongated metal body of substantially the same diameter as the outside diameter of said couplings;

integral threaded pins at the respective ends of said body; and

shoulders at the base of said pins having locking engagement with said second-named couplings;

said string of inertia bars having a neutral zone located about 80 percent of the distance up from the pump to the top of the string of inertia bars.

4,221,550

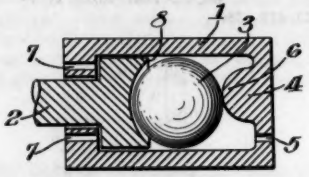
FLUID PUMP

Charles M. Pleass, Havre De Grace, Md., assignor to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 909,978, May 26, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,540

Int. Cl.³ F04B *43/00*

U.S. Cl. 417—437 **9 Claims**



1. A fluid pump having a piston and an encasement within which said piston is free to reciprocate wherein there is provided at least one unattached elastic resiliently deformable sphere between the head of said piston and the head of said encasement, means at the head of said encasement for effecting deformation of said sphere during the pumping stroke of said piston to thereby define a fluid enclosure that varies in volume with said pumping stroke, and a port communicating with said fluid enclosure for intake and discharge of pumped fluid.

4,221,551

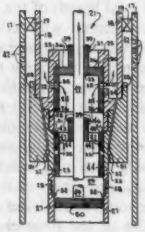
SLIDING VALVE PUMP

Clement L. Rupert, P.O. Box 774, Haynesville, La. 71038

Filed Jun. 26, 1978, Ser. No. 919,370

Int. Cl.³ F04B *21/02*

U.S. Cl. 417—511 **11 Claims**



1. A sliding valve pump for removing fluid from an oil well reservoir comprising:

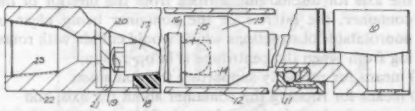
(a) a working barrel having an internal bore and at least two barrel ports in the wall thereof;

(b) a plunger rod in said bore and adapted for reciprocating motion in said bore with respect to said working barrel;
(c) a plunger carried by said plunger rod and slidably traversing a portion of the length of said bore when said plunger rod is reciprocating;
(d) upper valve means slidably carried by said plunger rod and slidably disposed in said bore in the upper segment of said working barrel, said upper valve means having at least one valve port;
(e) lower valve means slidably carried by said plunger rod and slidably disposed in said bore in the lower segment of said working barrel below said upper valve means, said lower valve having at least one shoulder port and at least one valve port; and
(f) valve stops carried by said working barrel and projecting into said bore to selectively interrupt the travel of said upper valve means and said lower valve means and effect selective registration of said valve port and said barrel ports when said plunger rod is caused to reciprocate in said working barrel.

4,221,552
HYDRAULIC MOTOR WITH VARIABLE SPEED

Wallace Clark, 1830 S. German Church Rd., Indianapolis, Ind. 46239

Filed Nov. 20, 1978, Ser. No. 961,978
Int. Cl.³ F03C *2/00*; E21B *4/02*
U.S. Cl. 418—48 **8 Claims**



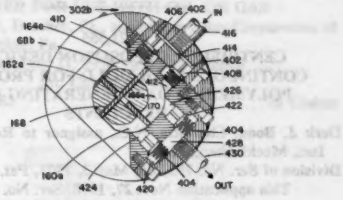
1. A down-hole earth drilling motor comprising a housing, a Moineau-type helical gear pair, and a water swivel having a fixed element and a rotating element, the outer helical gear of said pair being secured to said housing axially thereof and constituting the rotating element of said water swivel, the inner helical gear of said pair being disposed with its axis parallel to said outer helical gear but displaced by an amount equal to the eccentricity of the pair, a bearing element forming a part of the fixed element of said water swivel and restricting said inner helical gear against gyration but permitting rotation thereof on its lathe axis, said fixed element being secured to a non-rotating drill string, and a drill bit secured to said housing, whereby when a fluid is pumped through said motor, both inner and outer elements rotate on their respective axes but at different speeds.

4,221,553
ORBITAL PUMP WITH FLUID FLOW CONTROL

Edward J. Miles, 1960 Port Claridge Pl., Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 760,273, Jan. 18, 1977, Pat. No. 4,097,205. This application May 10, 1978, Ser. No. 904,389
The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.
Int. Cl.³ F04C *18/00, 27/00*
U.S. Cl. 418—61 R **8 Claims**

1. Orbital-type apparatus, which comprises:
(a) a generally cylindrical housing having a circumferential wall portion and opposing first and second transverse end walls and having therebetween an annular wall member, inwardly projecting from the circumferential wall portion;
(b) a generally spool shaped rotor having a central portion and first and second transverse ends which include, respectively, first and second radially projecting annular flanges,
said rotor being configured and disposed in the housing to have side surfaces of said first and second flanges in close proximity to corresponding first and second transverse side surfaces of the annular wall member respectively, a central compression chamber being formed between said first and second rotor flanges and fluid and gas inlet and outlet plenum chambers being formed, respectively, between the first rotor flange and the housing first end wall and between the second rotor flange and the housing second end wall,
(c) a drive shaft journaled for axial rotation in the housing, at least a portion of the shaft extending to axial ends of the rotor;
(d) connecting means for axially rotatably connecting the rotor to the drive shaft with an axial rotational axis of the rotor radially displaced from the rotational axis of the shaft to thereby cause central portions of the rotor to orbit about the central compression chamber when the rotor rotates relative to the drive shaft axis;



(e) a plurality of vanes mounted through the rotor, said vanes dividing the central compression chamber into a plurality of pumping sub-chambers which change volume as the rotor orbits about the drive shaft axis, each of said vanes extending diametrically through the rotor and being mounted for independent sliding movement relative to the rotor, each of the vanes being configured so that opposite ends thereof are always in tangential sliding contact with opposite, parallel inner wall regions of the housing as the rotor orbits about the central compression chamber;
(f) means for controlling inlet flows of fluids and gases from the inlet plenum into the pumping sub-chambers and for controlling outlet discharge of fluids and gas from the pumping subchambers into the outlet plenum, said flow controlling means including a plurality of spring loaded poppet valves; and
(g) a bell crank connected between the housing and the rotor for controlling orbital movement of the rotor relative to the housing.

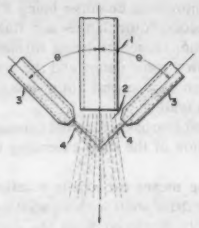
4,221,554
METHOD AND APPARATUS FOR FORMING SPHERICAL PARTICLES OF THERMOPLASTIC MATERIAL

Toshihiko Oguchi, Kawasaki; Ichiyoshi Saito, Tokyo; Tsuyoshi Ueno, and Tsutomu Kubo, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Tokyo, Japan

Division of Ser. No. 902,859, May 4, 1978. This application Dec. 29, 1978, Ser. No. 974,549
Claims priority, application Japan, May 4, 1977, 52-51514; May 14, 1977, 52-55839; May 14, 1977, 52-55840
Int. Cl.² B29C *23/00*
U.S. Cl. 425—7 **8 Claims**

1. Apparatus for forming spherical particles of thermoplastic materials, which includes means for discharging a jet of pressurized hot gas from an outlet port said outlet port having a periphery, and means including an opening for ejecting a stream of gas having thermoplastic particles dispersed therein toward the jet of pressurized hot gas, the opening being not in the path of said jet of pressurized hot gas and spaced outwardly

from the outlet port so as to provide a gap for permitting the flow of cooling air adjacent the periphery of the outlet port,



thereby preventing the thermoplastic particles from sticking to a wall of the opening.

4,221,555

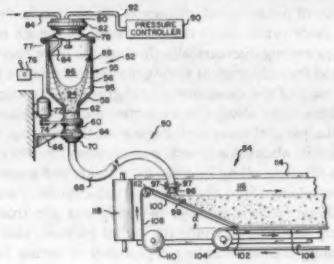
CENTRIFUGE DEPOSITION DEVICE AND CONTINUOUS SLAB MOLD FOR PROCESSING POLYMERIC-FOAM-GENERATING LIQUID REACTANTS

Derk J. Boon, Charlotte, N.C., assignor to Reeves Brothers, Inc., Mecklenberg, N.C.

Division of Ser. No. 793,286, May 3, 1977, Pat. No. 4,158,032. This application Nov. 27, 1978, Ser. No. 963,830

Int. Cl.[2] B29D *27/04;* **B04B** *5/10, 11/02*

U.S. Cl. 425—89 **15 Claims**



1. An apparatus for producing slabs of polymeric foam comprising:

(a) a centrifuge for prefoaming liquid polymeric-foam-generating reactants, which includes:

(a.1) a rotatable container having a side wall and a first end wall, the container being rotatable about an axis, the first end wall having an opening therethrough concentric of the axis for discharging a froth from the interior of the container and the interior of the container being clear of non-rotatable obstructions which would collide with the froth when the centrifuge is in operation;

(a.2) means for rotatably supporting the container;

(a.3) means for rotating the container about the axis; and

(a.4) means for introducing polymeric-foam-generating liquid reactants into the interior of the container as it rotates;

(b) a continuous slab mold, which includes:

(b.1) a belt conveyer extending linearly for translating a foam slab, a surface of the belt conveyor being generally planar and defining a mold bottom surface, the mold bottom surface of the belt conveyor being substantially horizontal when the mold is in a horizontal rest position;

(b.2) a first mold side wall and a second mold side wall extending along the belt conveyor, the two mold side walls being spaced apart and opposing one another, the opposing surfaces of the side walls defining mold side surfaces, the mold side surfaces being perpendicular to and adjacent to the mold bottom surface;

(b.3) a pouring board disposed between the mold side walls and having a first edge adjacent to the mold bottom surface of the belt conveyor, a surface of the pouring board defining a pouring surface, the pouring surface extending to the first edge and being inclined relative to the mold bottom surface;

(b.4) means for guiding a flexible-web mold bottom liner slidably across the pouring surface and the first edge of the pouring board to the mold bottom surface of the belt conveyor so that the mold bottom linear can be continuously translated across and away from the pouring board by the belt conveyor; and

(b.5) means for continuously translating a first flexible-web mold side liner and a second flexible-web mold side liner adjacent the first and second mold side surfaces respectively, the rate of translation of the mold side liners in the direction of the mold bottom liner being equal to the rate of translation of the mold bottom liner; and

(c) means for distributing froth from the interior of the container in the slab mold.

7. A centrifuge for prefoaming liquid polymeric-foam-generating reactants comprising:

(a) a rotatable container having a side wall and a first end wall, the container being rotatable about an axis, the first end wall having an opening therethrough concentric of the axis for discharging a froth from the interior of the container, the interior of the container being clear of nonrotatable obstructions which would collide with rotating froth when the centrifuge is in operation;

(b) means for rotatably supporting the container;

(c) means for rotating the container about the axis; and

(d) means for introducing polymeric-foam-generating liquid reactants into the interior of the container as it rotates and directing the reactants to the radially-inward surface of the side wall.

4,221,556

APPARATUS FOR FABRICATING PREFORMED OBJECTS FROM LIGNOCELLULOSE MATTED FIBER FABRICS

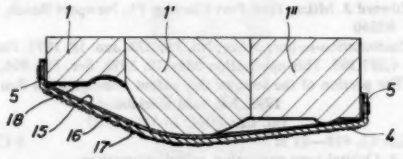
Gunter H. Kiss, Berlin, Fed. Rep. of Germany, assignor to K.C.E. Kiss Consulting Engineers, Verfahrenstechnik GmbH, Berlin, Fed. Rep. of Germany

Division of Ser. No. 789,632, Apr. 21, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,161

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2701480

Int. Cl.[2] A01J *25/00*

U.S. Cl. 425—182 **11 Claims**



1. An apparatus for forming objects from lignocellulose matted fiber fabric blanks, said apparatus comprising:

a tool comprising:

a first tool half having a first forming surface thereon; and

a second tool half having a second forming surface thereon, said first forming surface being formed to mate with said second forming surface, said tool halves being adapted to assume an open spaced apart position and a closed closely confronting adjacent position, at least

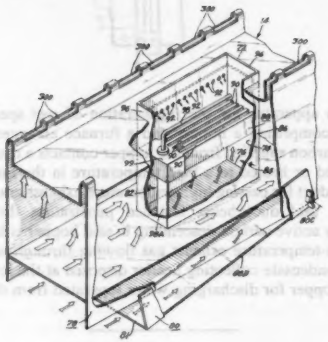
one of said tool halves being formed of a plurality of components dividing its forming surface into a like plurality of components, said components being movable in a parallel manner with respect to one another, toward and away from the other of said tool halves; and an elastically deformable first intermediate layer covering at least one of said first and second forming surfaces and being positioned between said one forming surface and a blank when an object is formed from the blank by moving said tool halves to the closed position with a blank positioned therebetween.

4,221,557

APPARATUS FOR DETECTING THE OCCURRENCE OF INADEQUATE LEVELS OF COMBUSTION AIR AT A FLAME

Stephen M. Jalics, Rocky River, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Jun. 12, 1978, Ser. No. 914,978
Int. Cl.³ F23N *5/24*
U.S. Cl. 431—22 **4 Claims**



1. Apparatus for providing indications of a less than adequate supply of combustion air in the vicinity of a port of a main gas burner the flow of primary air-gas mixture for which is supplied from a source of a primary air-gas mixture and the flow of secondary air for which is supplied from a source of secondary air, said apparatus comprising:

an auxiliary gas burner comprising air and gas mixing means, and auxiliary burner port means;

first means for supplying said mixing means with a flow of primary air-gas mixture from said source of said primary air-gas mixture, said last-named flow being small compared with said flow of primary air-gas mixture to said main gas burner but representative of the magnitude of said last-named flow;

second means for supplying said mixing means with a flow of secondary air from said source of secondary air, which flow varies in the same sense as variations in said flow of secondary air to said main burner;

means for supplying said auxiliary burner port means with air-gas mixture from said mixing means;

said flow of secondary air to said mixing means being sufficient to maintain an auxiliary flame at said auxiliary burner port means when the combustion air at said main gas burner port is at an adequate level for supporting satisfactory combustion thereat, but insufficient to maintain said auxiliary burner flame when the combustion air at said main burner port is at a level below said adequate level but sufficient to maintain a flame at said main burner means;

means for sensing the presence or absence of said auxiliary flame to develop signals for controlling said flow of primary air-gas mixture to said main burner; and

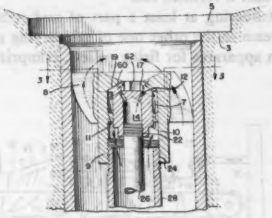
wherein said main gas burner comprises a main burner body the interior of which is supplied with said flow of primary air-gas mixture under pressure; said apparatus comprises means defining a path for said flow of secondary air to said main gas burner extending along the exterior of the bottom of said burner body; said air-gas mixing means comprising a mixing chamber located within said main burner body and having first aperture means in the walls thereof for the inflow of said primary air-gas mixture from said main burner body and having second aperture means in the walls thereof for the inflow of said secondary air; said second means for supplying said mixing means with a flow of secondary air comprising air deflector means extending into said flow of secondary air along the exterior of the bottom of said burner body for diverting into said mixing chamber, by way of second aperture means, a flow of said secondary air which varies in the same sense as the rate of flow of said secondary air along said path.

4,221,558

BURNER FOR USE WITH OIL OR GAS

Harry C. Santisi, Dresher, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Feb. 21, 1978, Ser. No. 880,016
Int. Cl.² F23M *9/00*
U.S. Cl. 431—183 **18 Claims**



1. A burner assembly mounted within a generally cylindrical furnace cavity, comprising in combination,

(A) a burner having a generally cup shaped combustion zone;

(B) a dual fuel feed cartridge adapted to discharge alternative fluid fuels in the direction of said combustion zone, said cartridge having;

(a) a nozzle mounted in said cavity;

(b) passage means in said nozzle having an entrance adapted to receive a liquid fuel and a plurality of exit ports to discharge said fuel toward said cup;

(c) slot means tangentially communicating with each said exit port and defining a plurality of slots to direct fluids into said cup, said slot means located in said nozzle;

(d) fin means surrounding said slot means (c) to swirl combustion air admitted into said cavity, as it is supplied to said cup;

(e) means for conducting a liquid fuel to said passage means (b);

(f) means for conducting a gaseous fuel or atomizing agent to said slot means (c);

(g) means for selectively activating and deactivating said means (e) and (f) to conduct alternative fuels to said cup if desired.

4,221,559

PROCESS AND APPARATUS FOR FIRING PELLETS

Hanns Feichtner, Hellmonsödt, and Peter Scheikl, Ottensheim, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 28, 1978, Ser. No. 974,096
Claims priority, application Austria, Mar. 24, 1978, 2119/78
Int. Cl.³ F26B *9/12*
U.S. Cl. 432—18 **13 Claims**

1. In a process of firing pellets, which comprises moving a

charge of pellets on a traveling grate in succession through first and second drying zones, a preheating zone, first and second firing zones, and first and second cooling zones, in that order,

drying said pellets in said first and second drying zones,

preheating said pellets in said preheating zone,

firing said pellets in said first and second firing zones, and

cooling said pellets in said first and second cooling zones,

forcing cooling air through said charge in said first and second cooling zones,

exhausting a first stream of said cooling air from said first cooling zone and delivering at least a part of said exhausted first stream of cooling air to said first and second firing zones, and

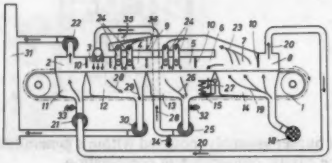
exhausting a second stream of said cooling air from said second cooling zone and delivering said second stream of exhausted cooling air to one of said drying zones, the steps of

(a) exhausting a first exhaust gas stream from said second firing zone and cooling the first exhaust gas stream in a waste heat boiler,

(b) exhausting a second exhaust gas stream from said first firing zone and mixing the second exhaust gas stream with said first exhaust gas stream which has been cooled in said waste heat boiler whereby a mixed exhaust gas stream is formed, and

(c) delivering at least a part of said mixed exhaust gas stream to the other one of said drying zones.

6. In an apparatus for firing pellets, comprising



a kiln defining first and second drying zones (2, 3), a preheating zone (4), first and second firing zones (5, 6), and first and second cooling zones (7, 8),

a traveling grate (1) arranged to carry a charge of said pellets and operable to move said charge through the first and second drying zones, the preheating zone, the first and second firing zones, and the first and second cooling zones, in that order,

a first air blower means (18) for forcing cooling air (19) through said charge in said first and second cooling zones, and for delivering at least a part of a first stream (23) of said cooling air to said first and second firing zones after it has passed through said charge, and

a second air blower means (21) for exhausting a second stream (20) of said cooling air from said second cooling zone after it has passed through said charge and for delivering the second stream of cooling air to one (2) of said drying zones, the improvement of

(a) an exhaust gas blower (25) means for exhausting a first exhaust gas stream (27) from said second firing zone (6) in a first path and for exhausting a second exhaust gas stream (26) from said first firing zone (5) in a second path, the exhaust gas blower means being arranged to mix said first and second exhaust gas streams and to deliver at least a part of the resultant mixed exhaust gas stream (28) to the other one (3) of said drying zones, and

(b) a waste heat boiler (15) in the first path for cooling the first exhaust gas stream (27) before it is mixed with the second exhaust gas stream (26).

4,221,560

APPARATUS FOR REGENERATION OF WET SPENT ACTIVE CARBON

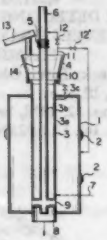
Hideji Idei; Mitsuhiko Iwasaki, both of Yokohama; Michio Ito, Yokosuka; Toshimichi Hirabayashi, Tokyo; Zenji Matsumoto, Izumi, and Nobutaka Ninomiya, Nagaokakyo, all of Japan, assignors to JGC Corporation, Tokyo and Takeda Chemical Industries, Ltd., Osaka, both of, Japan

Filed Oct. 10, 1978, Ser. No. 949,985

Claims priority, application Japan, Oct. 20, 1977, 52-125184

Int. Cl.³ F27B *15/10*

U.S. Cl. 432—99 8 Claims



1. An apparatus for the regeneration of wet spent active carbon comprising a hopper and a furnace arranged so that active carbon supplied from the hopper contacts a reaction gas generated or heated to a high temperature in the furnace, an exhaust duct for passing high-temperature exhaust gas from the furnace, said duct being installed penetrating the hopper whereby active carbon descending in said hopper is heated by the high-temperature exhaust gas flowing through said duct, and a condensate collecting header disposed at the lower part of the hopper for discharging water separated from the active carbon.

4,221,561

ALUMINUM SOLDERING FURNACE

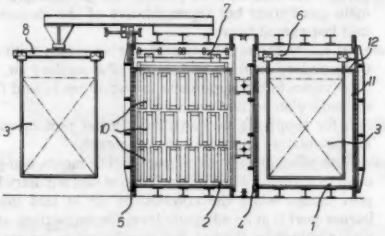
Ferdinand Limque, Berg en Dal, Netherlands, and Hans Bertrand, Goch, Fed. Rep. of Germany, assignors to Ipsen Industries International, Gesellschaft mit beschränkter Haftung, Kleve, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,050

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745772

Int. Cl.² F27B *9/02*

U.S. Cl. 432—128 8 Claims



1. Vacuum-aluminum soldering furnace, comprising:

walls defining a horizontal type furnace of rectangular cross-section with an evacuatable vacuum sealable soldering chamber having two lateral heating zones,

side heaters mounted on remote opposite sides of said walls at opposite remote sides of said two lateral heating zones, respectively, in said soldering chamber,

said soldering chamber having a middle heating zone arranged parallel to and between said lateral heating zones,

a laterally disposed openable gate vacuum-tight sealably disposed in said walls communicating with said soldering chamber,

transport system means for moving a middle heating element horizontally into and out of the middle heating zone,

a middle heating element of said middle heating zone being arranged on said transport system means horizontally removable from said soldering chamber,

a work charging cage horizontally removeably disposed in the lateral heating zones, respectively, on both sides of said middle heating element between the latter and a respective one of said side heaters.

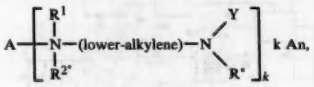
4,221,562

BLEED-FAST CATIONIC DYESTUFFS

Alex Pociluyko, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed May 4, 1978, Ser. No. 902,661
Int. Cl.[2] C09B 67/00; D06P 3/60, 5/02
U.S. Cl. 8—506 7 Claims

1. An aqueous, printing fluid containing a dialdehyde selected from the group consisting of glyoxal and glutaraldehyde and a water-soluble, cationic dyestuff of the formula:

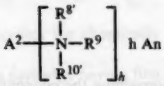


k An,

or

g An,

or



h An

wherein

R^o is hydrogen, lower-alkyl or hydroxy-lower-alkyl;

R^1 is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

R^2 is lower-alkyl, lower-alkenyl, hydroxy-lower-alkyl or (lower-alkylene)-NR^oY or R^1 and R^2 together with the nitrogen atom, are pyrrolidino, piperidino or 4-lower-alkanoyl piperazino;

Y is hydrogen or

wherein R is hydrogen, lower-alkyl, lower-alkenyl, phenyl or phenyl-lower-alkyl;

A is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge.

k is a small integer whose value is dependent on the nature of A such that it has a range from one to two;

R^8 is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

R^9 is lower-alkyl, hydroxy-lower-alkyl or NH_2;

R^{10} is lower-alkyl or lower-alkenyl;

A^1 is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge;

g is a small integer whose value is dependent on the nature of A^1 such that it has a range from one to two;

$R^{8'}$ is lower alkyl;

$R^{9'}$ is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

$R^{10'}$ is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl or $R^{9'}$ and $R^{10'}$ together with the nitrogen atom are morpholino;

A^2 is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge;

h is a small integer whose value is dependent on the nature of A^2 such that it has a range from one to two; and

An is an anion.

4,221,563

DYE COMPOSITIONS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 15, 1978, Ser. No. 969,899
Int. Cl.[2] D06P 3/14, 3/24, 3/06
U.S. Cl. 8—582 6 Claims

1. A dye composition for the dyeing of natural proteinaceous and synthetic polyamide fibers which comprises one part by weight of an acid dyestuff and 1 to 20 parts by weight of a dye assistant comprising a mixture of 70 to 90 weight percent butyl benzoate and 30 to 10 weight percent of a mixture consisting essentially of from 10 to 90 weight percent lower alkyl toluates and from 90 to 10 weight percent lower alkyl benzoates.

4,221,564

WATER-INSOLUBLE ALKALI METAL ALUMINOSILICATES AND POLYCARBOXYLIC ACIDS IN THE TANNING PROCESS FOR THE PRODUCTION OF LEATHER

Juergen Plapper, Hilden; Klaus Schumann, Erkrath; Emanuel Arndt, Düsseldorf, and Emil Ruscheinsky, Leverkusen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,662
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822072
Int. Cl.[2] C14C 1/00, 1/08
U.S. Cl. 8—94.17 25 Claims

1. In the process of tanning for the production of leather comprising subjecting uncured hides to the action of an aqueous liquor at a pH of about 3 to 4.5 containing (1) chemical tanning agents, and (2) auxiliary chemicals to tanning and recovering leather, the improvement consisting essentially of employing a water-insoluble aluminosilicate, containing bound water, of the formula

$$(Cat_{2/n}O)_x.Al_2O_3.(SiO_2)_y$$

wherein Cat represents a cation selected from the group consisting of alkali metals, bivalent metal ions, trivalent metal ions, and mixtures thereof, n represents an integer from 1 to 3 of the valence of said cation, x is an integer from 0.5 to 1.8 and y is an integer from 0.8 to 50, said aluminosilicates having an average particle size in the range of 0.1μ to 5 mm and a calcium binding power of from 0 to 200 mg CaO/gm of anhydrous active substance measured at 22° C., in combination with a polycarboxylate selected from the group consisting of aliphatic dicarboxylic acids having from 2 to 8 carbon atoms, aliphatic tricarboxylic acids, having from 4 to 8 carbon atoms, benzenedicarboxylic acids, benzenetricarboxylic acids and hydrolyzable esters thereof with aliphatic alcohols having from 1 to 6 carbon atoms and 1 to 6 hydroxyl groups, as partial replacement of said chemical tanning agents and said auxiliary chemicals to tanning.

4,221,565

PROCESS AND APPARATUS FOR MACHINE WASHING AND CLEANING WITH LOW-PHOSPHATE OR PHOSPHATE-FREE WASHING SOLUTIONS

Werner Graupner, Dormagen; Heinz Oberlack, Meerbusch, and Hermann-Josef Welling, Viersen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 973,792
Int. Cl.[2] B08B 3/00
U.S. Cl. 8—137 8 Claims

1. In a cyclic method for the machine washing of soiled solid materials with a washing solution prepared from hard water in a washing area, which comprises in sequence:

(a) forming a charge of an aqueous washing solution having a dissolved content between 0.05 gm/liter and 3 gm/liter of a water-soluble calcium-binding sequestrant, and customary surface-active compounds selected from the group consisting of an anionic detergent and a nonionic detergent,

(b) passing said washing solution through an area separate and spaced from the washing area, said separate area having a previously incorporated content of a water-insoluble cation-exchanging, bound-water-containing crystalline aluminosilicate having a calcium-binding power of at least 50 mg CaO/gm on the anhydrous basis and the formula

$$(Cat_{2/n}O)_x.Al_2O_3.(SiO_2)_y$$

wherein Cat is a cation having the valence n which is exchangeable with calcium, x is a number from 0.7 to 1.5, and y is a number from 0.8 to 6, the amount of the aluminosilicate is from 0.2 gm to 10 gm per liter of washing solution,

(c) separating said washing solution from said aluminosilicate,

(d) pumping at least part of said washing medium through said separate area containing said aluminosilicate and recycling the separated washing solution as washing medium to said washing area, at such a rate that said washing medium passes a total of at least five times through said separate area containing said aluminosilicate during said washing step, and

(e) continuing said recycling until said soiled solid material is substantially cleaned,

the improvement consisting of employing an aluminosilicate having a particle size of from 0.05 to 1 mm, passing said washing solution through said separate area in Step (b) with a direction of flow opposite to the pull of gravity, and selecting a flow velocity of said washing solution through said separate area wherein, at the outflow of said separate area, the flow velocity is less than the rate at which the aluminosilicate particles sink, wherein the solid aluminosilicate particles do not require filtration from the circulating washing medium.

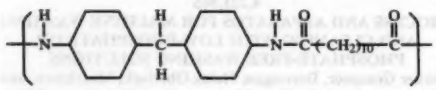
4,221,566

DYE COMPOSITIONS CONTAINING A COMBINATION OF DYE ASSISTANTS WHICH INCLUDES A MIXTURE OF LOWER ALKYL ESTERS OF AROMATIC CARBOXYLIC ACIDS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 5, 1978, Ser. No. 912,656
Int. Cl.[2] D06P 3/02, 3/26
U.S. Cl. 8—582 **7 Claims**

1. The dye composition for synthetic polyamide fiber comprised of forty percent or more of the condensation product of 4,4'-diaminodicyclohexyl methane and decanodicarboxylic acid having the basic repeating unit:



which comprises:

(A) C. I. Disperse Blue 79 dye

(B) A dye assistant comprising a combination of

(a) a mixture of lower alkyl esters of benzoic and toluic acids with;

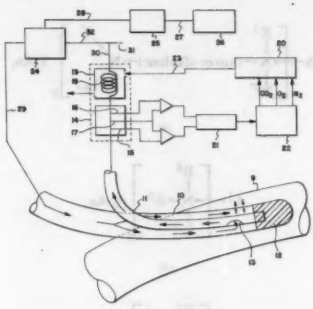
(b) at least one material selected from the group consisting of dibenzyl ether, 8-(3-hydroxy-1-butoxy) tricyclo[5,2,1,$0^{2,6}$]-4-decene, dicyclopentenyl alcohol, 2-methoxy ethyl benzoate and 2-ethoxyethyl benzoate.

4,221,567

SAMPLING AND DETERMINATION OF DIFFUSIBLE CHEMICAL SUBSTANCES

Justin S. Clark; William D. Wallace, and Frederick L. Farr, all of Salt Lake City, Utah, assignors to Intermountain Health Care, Salt Lake City, Utah

Filed Dec. 23, 1977, Ser. No. 863,802
Int. Cl.[2] G01N 33/16
U.S. Cl. 23—230 B **14 Claims**



1. A method for determining the concentration of diffusible gaseous substances in a fluid matrix comprising:

(a) introducing a probe into said fluid matrix, said probe containing an outer membrane permeable to the substances being determined and consisting of interconnected outer and inner chambers, the walls of said inner chamber being less permeable to the substances being determined than said membrane,

(b) introducing an equilibration liquid of limited solubility to the substances being determined into said outer chamber in contact with said membrane,

(c) allowing said gaseous substances to diffuse across said membrane and equilibrate with said equilibration liquid,

(d) withdrawing said equilibration liquid equilibrated with said gaseous substances from said outer chamber through said inner chamber and introducing it to a sensor chamber containing sensors which are specific for the substances being determined, the electrical output of a specific sensor being representative of the concentration of a particular gaseous substance in said fluid matrix,

(e) relaying the electrical output obtained at each sensor to controller means wherein it is stored.

(f) utilizing the stored signals in said controller means to actuate a chemical feeding means such that the chemical feeding means introduces a known concentration of gases being determined into a calibration chamber such that the concentration of each gas in the calibration chamber is known

(g) passing said equilibration liquid from said sensor chamber to a hollow fiber means within the calibration chamber wherein the equilibration liquid equilibrates with the known concentrations of gaseous substances in said calibration chamber

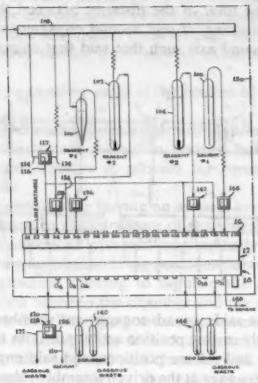
(h) passing the equilibration liquid from the hollow fiber means within the calibration chamber by reverse flow back to the sensor chamber whereby said sensors are calibrated with the equilibration liquid equilibrated with known concentrations of the gaseous substances being determined and the electrical output of each sensor calibrated is relayed to said controller means and stored.

4,221,568

SAMPLE PROCESSOR FOR CHEMICAL ANALYSIS

Heinz G. Boettger, La Canada, Calif., assignor to Jet Propulsion Laboratory, Pasadena, Calif.

Filed Jan. 17, 1979, Ser. No. 4,044
Int. Cl.[2] G01N *31/06*
U.S. Cl. 23—230 R 7 Claims



1. A sample processor for chemically processing a sample comprising:

a sample-holding cartridge having first and second openings and holding a sample material to be processed;

a carriage constructed to hold said cartridge, said carriage movable to advance a cartridge thereon past a plurality of predetermined stations;

a plurality of fluid injectors, each having an injector port positioned at a different one of said stations in alignment with a first of said cartridge openings when the cartridge is at said station, said injector constructed to inject a fluid to reach the sample in said cartridge;

a plurality of fluid receivers, each having a port positioned at a different one of said stations in alignment with a second of said cartridge openings when the cartridge is at said station; and

a plurality of reagent containers, each containing a fluid reagent which chemically reacts with said sample, each container connected to a selected one of said fluid injectors;

each of said fluid injectors constructed to apply said fluid to flow it through said cartridge, and said ports forming substantially fluid tight seals with said cartridge around said openings therein.

4,221,569

CHROMATOGRAPHIC ANALYSIS OF GASEOUS SAMPLES CONTAINING REACTIVE SULFUR

Earle R. Kebbekus, Maplewood, N.J., assignor to Will Ross, Inc., Dallas, Tex.

Filed Mar. 1, 1979, Ser. No. 16,715
Int. Cl.[2] G01N *31/08*
U.S. Cl. 23—232 C 4 Claims

1. In a method for analyzing a gaseous sample containing sulfur bearing molecules in systems having sulfur reactive or adsorptive components, the improvement which comprises admixing said gaseous sample with a carrier gas consisting of a mixture of an analytically pure inert gas and an amount of a compound containing a nucleophilic sulfur atom effective to deactivate said components.

4,221,570

METHOD AND APPARATUS FOR PRODUCING HARDENED CARBONACEOUS AGGLOMERATES

George E. Wasson, Eighty-Four, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,667
Int. Cl.[2] C10L *5/00*; C10B *1/10, 57/12*
U.S. Cl. 44—10 K 7 Claims

1. In a method for producing hardened carbonaceous agglomerates from a feedstock consisting of at least one material selected from the group consisting of finely divided coal solids, finely divided coal-derived solids and hydrocarbonaceous binders by charging said feedstock to rotary kiln at an elevated temperature, said rotary kiln being positioned to rotate about its horizontal axis, and tumbling said feedstock in said rotary kiln to produce said hardened carbonaceous agglomerates, said rotary kiln including a forming zone wherein said agglomerates are formed and a hardening zone wherein said agglomerates are hardened, the improvement comprising: passing a gas into said hardening zone to heat said agglomerates in said hardening zone, and recovering at least a portion of said gas from said hardening zone.

4. The improvement of claim 1 wherein said agglomerates are carbonized in said hardening zone.

5. In an apparatus for producing hardened carbonaceous agglomerates from a feedstock consisting of at least one material selected from the group consisting of finely divided coal solids, finely divided coal-derived solids and hydrocarbonaceous binders by charging said feedstock to a rotary kiln at an elevated temperature and tumbling said feedstock in said rotary kiln to produce said hardened carboanceous agglomerates, said apparatus comprising:

(a) a rotary kiln means, said rotary kiln being rotatably supported to rotate about its inclined horizontal axis and including a forming zone near its inlet end and a hardening zone near its outlet end;

(b) inlet means for introducing said feedstock into said inlet end of said rotary kiln means;

(c) product recovery means for recovering said hardened carbonaceous agglomerates from said outlet end of said rotary kiln;

(d) sealing means positioned to prevent the escape of gases from said rotary kiln; and

(e) means for controlling the residence time of said feedstock in said kiln; the improvement comprising in combination

(f) a gas inlet for introducing gas into said hardening zone near said outlet end of said rotary kiln; and

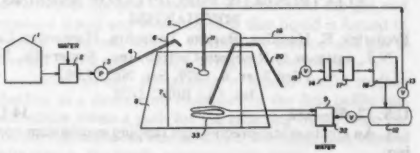
(g) a gas recovery means for withdrawing gas from said rotary kiln near the inlet end of said hardening zone.

4,221,571

SOLAR HEATED ANAEROBIC DIGESTOR

Don Rhoades, Box 312, High Level, Alberta, Canada

Filed Nov. 13, 1978, Ser. No. 959,669
Int. Cl.[3] C10J *3/20*; C05F *11/08*; B01J *19/00*; F24J *3/02*
U.S. Cl. 48—111 3 Claims



1. A solar heated anaerobic digestor adapted to utilize a slurry of organic material capable of decomposing to produce a liquid fertilizer and methane gas, comprising:

sealed digestor container means having adjoining upper and lower portions defined by upper and lower side wall segments, the lower portion of which is operative to con-

tain the organic material and the upper portion of which is capable of containing the gas produced;

means, connected to and communicating with the sealed container means, for introducing the slurry into the container means;

means, connected to the container means and communicating with the lower portion, for draining slurry product from the container means;

means, connected to and communicating with the upper portion of the container means, for withdrawing gas produced;

means in the lower portion for stirring the slurry;

secondary heating means for heating the slurry present in the lower portion;

a layer of heat absorptive material wrapped around the lower side wall segment;

a plurality of abutting removable panels of insulative material enclosing the layer of heat absorptive material;

a layer of insulative material wrapped around the upper side wall segment of the container means;

a layer of transparent material wrapped around the panels and the upper side wall insulative material; said layer of transparent material being spaced outwardly from the insulating panels, whereby some of the panels may be temporarily removed to permit solar radiation to heat an exposed portion of the heat absorptive material, and may be replaced when the solar radiation diminishes, thereby enabling a combination of solar heat and heat obtained from the secondary heating means to be used to maintain the temperature of the contained slurry at a desirable level;

first frame means attached to the container for mounting the heat absorptive material and insulative material and insulative panels; and

second frame means spaced outwardly from the lower side wall segment for mounting the transparent material around the lower side wall segment.

4,221,572

ABRASIVE MATERIAL HAVING A POLYCARBODIIMIDE AND POLYURETHANE RESIN BINDER

Yasuhiro Torimae, and Tamio Ishiai, both of Wakayama, Japan, assignors to Kao Soap Company, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,795
Claims priority, application Japan, Mar. 3, 1977, 52/23008
Int. Cl.[2] B24B *1/00, 37/02*
U.S. Cl. 51—298 **11 Claims**

1. An abrasive material consisting essentially of:

(a) abrasive grains, and

(b) a polycarbodiimide and polyurethane resin as the binder for said abrasive grains, having from 0.5 to 10 gram equivalents of carbodiimide bonding and at least 0.5 gram equivalents of urethane bonding per 1000 grams of the resin.

4,221,573

ELECTROSTATIC PRECIPITATOR RAPPING MECHANISM

Frederick E. Hankins, Raritan Township, Hunterdon County, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.

Filed Mar. 6, 1979, Ser. No. 17,902
Int. Cl.[2] B03C *3/76*
U.S. Cl. 55—112 **14 Claims**

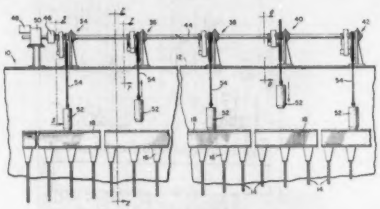
1. An electrostatic precipitator rapping mechanism comprising:

a driving assembly mounted for rotation about a first axis and carrying a first engagement member radially spaced from the first axis;

a driven assembly mounted for pivotal movement on a second axis generally parallel to and offset from said first axis;

means attached to said driven assembly for lifting a weight as said driven assembly pivots in one direction towards a release position and for allowing the weight to fall to impact on a precipitator element as said driven assembly pivots in the other direction towards a resting position;

a second engagement member carried by said driven assembly and radially spaced from the second axis for engagement by said first engagement member; the radial space between said first engagement member and said first axis being greater than the distance between the axes and less than the total of the distance between the axes and the radial spacing of said second engagement member from said second axis such that said first engagement member



engages said second engagement member at the driven assembly resting position and at positions intermediate the resting and release positions, and said engagement members disengage at the driven assembly release position, and wherein:

one of said engagement members comprises a fixed member having a surface portion extending generally radially with reference to the axis of its respective assembly and mounted securely to the respective assembly; and wherein

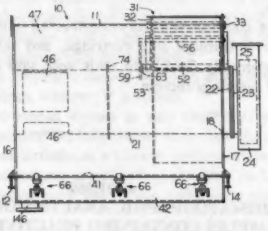
said fixed member is adjustably mounted on the driven assembly.

4,221,574

APPARATUS FOR REMOVING PARTICULATES FROM THE EXHAUST GASES GENERATED IN DRUM MIXERS AND AGGREGATE DRYERS

Ted C. Loggins, Jr., and Jerry Kraim, both of Los Angeles, Calif., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 23, 1979, Ser. No. 32,291
Int. Cl.[2] B01D *47/06*
U.S. Cl. 55—238 **5 Claims**



1. In a scrubber for cleaning particulate laden gases comprising:

an outer housing adapted to be carried on supporting structure and having an axis, said housing having closing end walls;

a tubular inner tube supported within said housing; having one end in abutting engagement with an end wall of said housing and having its opposite end extending through the opposite end wall;

said inner tube positioned with respect to the inner surface of said housing to define a chamber;

a plurality of ports formed in said inner tube to establish a communication means between said chamber and the core of said tubular inner tube;

a gas inlet communicating in tangential oriented relationship with the chamber in the interior of said housing;

moisturizing means for wetting the particulate carried by the gases entering through said gas inlet prior to the gas entering into said chamber;

an exhaust fan operably connected to the extending end of said inner tube and operable to draw gases supplied to the gas inlet through said chamber and through said ports and the core of said tubular inner tube to exhaust the gases therefrom;

a longitudinally extending sump at the bottom of said housing;

a longitudinally extending opening formed in the wall of said housing at the bottom thereof in position between said sump and said chamber to provide for communication therebetween;

an elongated control plate having an arcuate configuration which conforms to the curvature of the inner surface of said housing associated with said longitudinally extending opening, said control plate being positionable with respect to said longitudinal opening to regulate the amount of communication between the chamber and the sump;

adjusting means for effecting a positioning movement of said control plate to establish the desired communicating spacing between said sump and said chamber; and,

a control means for regulating the velocity of the gases entering through said gas inlet into said chamber;

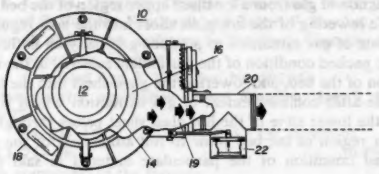
whereby said exhaust fan draws the moisturized gas through said chamber in a swirling path of travel around said inner tube and out through said core of said inner tube and the particulates by centrifugal force are carried to the inner surface of said housing and thence into said sump.

4,221,575

PNEUMATICALLY OPERATED AIRFLOW VALVE

Frederic M. Wagner, Forest City, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 5, 1979, Ser. No. 27,229
Int. Cl.[2] B01D *46/42*
U.S. Cl. 55—310 **7 Claims**



1. An apparatus comprising in combination:

a housing including an inlet port for ambient air, and an outlet port for filtered air,

a filter means disposed within said housing,

a fan means disposed within said housing for moving ambient air through said filter means and said housing under superatmospheric pressure,

an air duct attached to said housing outlet port,

a pneumatically operated bypass valve in said air duct comprising

a housing having an inlet port for ambient air and an outlet port for passage of ambient air into said air duct,

an inflatable, resilient bellows means mounted within said valve housing, which normally is deflated and does not close said inlet port but closes said inlet port when inflated, and

a conduit for communicating air pressure from said filter housing to said bellows means to inflate said bellows means,

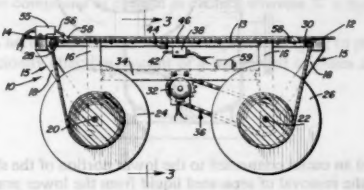
whereby said bypass valve inlet port is automatically closed by inflation of said bellows means with superatmospheric pressurized air introduced via said conduit from said filter housing when the fan is in operation, and is automatically opened by deflation of said bellows means when the fan is not in operation, thereby providing a free air path to said air duct.

4,221,576

AUTOMATIC AIR FILTER CHANGER

Robert E. Phillips, Jr., Baton Rouge, La., assignor to James M. Perrier, Sr., New Orleans, La., a part interest

Filed Jan. 19, 1979, Ser. No. 5,031
Int. Cl.[2] B01D *46/18*
U.S. Cl. 55—352 **10 Claims**



7. A filter changing apparatus for facilitating the replacement of clogged filter material in a forced air circulation system with fresh filter material comprising a frame means for holding filter material in an air flow stream in said forced air circulation system; a length of substantially planar filter material; a light metal mesh disposed in said frame in supporting relation to the filter material; a switch means disposed medially of said frame for actuation upon the clogging of said filter material causing a greater deflection of said filter material in response to said air flow; supply means for supplying said filter material to said frame; take-up means for removing clogged filter material from said frame; and power means for removing said filter material from said supply means for replacing the filter material in said frame and simultaneously removing the filter material from said frame and storing it on the take-up means.

4,221,577

GAS-LIQUID SEPARATOR

Neely E. Lowrie, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 3, 1979, Ser. No. 26,495
Int. Cl.[2] B01D *45/12*
U.S. Cl. 55—392 **2 Claims**

1. A separator for liquid and gas, including,

a cylindrical shell mounted vertically,

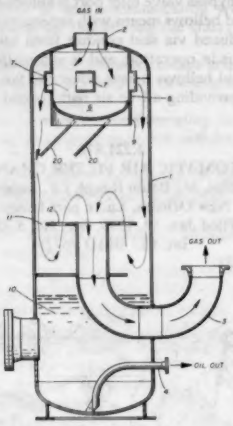
an inlet through the wall of the shell conducting gas in which liquid is entrained,

a cylinder mounted within the shell and comprising a first curved baffle surface upon which is directed the gas and entrained liquid and mounted such that liquid is forced to impinge upon and adhere to the first surface and gas is directed into a spiral path leaving the first surface,

said cylinder further comprising a second baffle surface attached as a downward extension of the first baffle surface which forms a path for the adhering liquid from the first curved baffle surface on which the liquid falls toward collection in the lower portion of the shell,

rods attached by their external surfaces from each of their first ends to the lower edge of the second baffle surface and their second ends extending to near the internal wall of the shell of the separator so as to provide a path along the external surfaces of the rods for descending liquid on the second baffle surface to the internal wall of the shell,

an oulet connected to the upper portion of the shell for the removal of separated gas,



and an outlet connected to the lower portion of the shell for the removal of separated liquid from the lower portion of the shell.

4,221,578

METHOD OF MAKING CONTROLLED-PORE SILICA STRUCTURES FOR HIGH TEMPERATURE INSULATION

Robert D. Shoup, and William J. Wein, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,503
Int. Cl.² C04B *35/14*
U.S. Cl. 65—22 **2 Claims**

1. A method for making a porous, essentially alkali metal-free, amorphous body exhibiting a thermal conductivity less than about 0.70 BTU in/hr ft²°F. at 400° F. and capable of long term use at temperatures up to 1000° C., wherein the average pore diameter ranges between about 100 Å–100,000 Å and at least 80% of the pores fall within ±20% of the said average pore diameter value, which comprises:

(a) preparing solutions having a pH between 10–15 and containing about 1–12 moles SiO_2/liter in solution of potassium silicate and colloidal silica;

(b) combining those solutions at a temperature between the freezing and boiling points thereof in the proper proportions equivalent to a weight ratio of 3:1 to 1:9 potassium silicate solution to colloidal silica solution wherein said potassium silicate solution consists essentially, by weight, of 8.3% K_2O, 20.8% SiO_2, balance H_2O, and said colloidal silica solution consists essentially, by weight, of 40% SiO_2, balance H_2O;

(c) adding thereto an amount of an infrared radiation absorbing metal oxide selected from the group of FeO and CrO sufficient to constitute 0.25–5% by weight of the body, an amount of an infrared radiation scattering metal oxide selected from the group of TiO_2 and ZrO_2 sufficient to constitute 1–10% by weight of the body, both of said metal oxides being in the form of inert particulate materials passing a No. 200 United States Standard Sieve, and an amount of organic and/or inorganic fibers having length dimensions between about 0.125"–1.5" sufficient to constitute up to 15% by weight of the body to impart reinforcement and inhibit the formation of cracks during the subsequent firing steps, the total of said infrared radiation absorbing metal oxide, said infrared radiation scattering metal oxide, and said organic and/or inorganic fibers being less than 20% by weight of the body;

(d) reacting an organic compound therewith selected from the group consisting of formaldehyde, paraformaldehyde, formamide, glyoxal, methyl formate, methyl acetate, ethyl formate, ethyl acetate, and mixtures thereof at a temperature between the freezing and boiling points of the solution for a sufficient length of time to polymerize the silica into a coherent, porous, amorphous gelled body;

(e) leaching said gelled body with a weak acid solution (pH down to 4) at a temperature between the freezing and boiling points of said solution;

(f) drying said gelled body at a temperature below about 100° C.; and

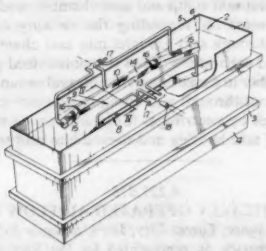
(g) firing said dried body at a temperature between about 900°–1100° C.

4,221,579

THERMAL TREATMENT OF GLASS SHEETS

Donald C. Wright, Parbold; Brian Marsh, Orrell, and Rodney L. D. Young, Parbold, Nr. Wigan, all of England, assignors to Pilkington Brothers Limited, St. Helens, England

Continuation of Ser. No. 944,612, Sep. 21, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,637
Claims priority, application United Kingdom, Sep. 29, 1977, 40564/77
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **7 Claims**



1. A method of thermally treating a glass sheet in a bed of gas-fluidised particulate material, comprising maintaining said gas-fluidised bed at a glass-treatment temperature, heating a glass sheet to a temperature above its strain point, commencing extraction of gas from a localised upper region of the bed prior to the lowering of the hot glass sheet into the bed, regulating the rate of gas extraction to produce gradually an unfluidised static packed condition of the particulate material in the upper region of the bed, and lowering the glass sheet into the bed at a time after commencement of gas extraction which is such that the lower edge of the hot glass sheet passes through said upper region of the bed prior to full attainment of the static packed condition of the particulate material in said upper region.

4,221,580

GLASS SHEET VACUUM MOLDING APPARATUS WITH UNIFORM RELEASE MEANS

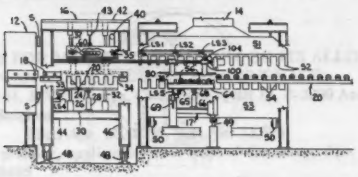
Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,695
Int. Cl.² C03B *23/02*
U.S. Cl. 65—273 **8 Claims**

1. Apparatus for shaping glass sheets comprising:

glass sheet retaining vacuum means having an enclosed chamber in communication with a source of vacuum, an apertured glass-engaging wall defining one side of the chamber, the remainder of the chamber being defined by housing walls in non-glass-engaging portions of the glass sheet retaining means, at least one opening in the non-glass-engaging housing walls communicating the chamber

with the atmosphere, the total effective area of said housing opening or openings being sufficiently great relative to the area of apertures in the glass-engaging wall to provide rapid release of vacuum from the chamber through said



housing opening or openings upon shut-off of vacuum from the chamber so that a glass sheet retained on the glass-engaging wall by vacuum may separate substantially uniformly therefrom, and bending means coacting with the glass sheet retaining means for shaping a glass sheet.

4,221,581

PHENOXYPHENOXYALKANECARBOXYLIC ACID ESTERS

Otto Rohr, Therwil, Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Beat Böhner, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,236

Claims priority, application Switzerland, Oct. 25, 1977, 12961/77

Int. Cl.[2] A01N *9/12, 9/24, 9/20*

U.S. Cl. 71—70 **5 Claims**

1. 2-[2-Nitro-5-(2'-chloro-4'-trifluoromethylphenoxy)-phenoxy] propionic acid methoxyethyl ester.

4,221,582

PLANT GROWTH REGULATING COMPOUNDS, COMPOSITIONS AND METHODS

John F. Garrod, Draycott; Douglas Greenwood, Nottingham; Leonard G. Copping, Southwell, and Robert F. Brookes, Tollerton, all of England, assignors to The Boots Company Limited, Nottingham, England

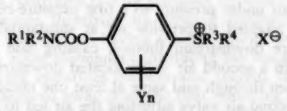
Filed Apr. 3, 1978, Ser. No. 892,558

Claims priority, application United Kingdom, Apr. 5, 1977, 14243/77

Int. Cl.[2] A01N *5/00, 9/00, 9/12;* **C07D** *265/30*

U.S. Cl. 71—76 **10 Claims**

1. A compound of the formula



in which R^1 and R^2 together with the nitrogen atom to which they are attached form a morpholino ring, Y is C_1–C_4 alkyl, C_1–C_2 alkoxy or halo, n is 0 or an integer 1 to 3, R^3 and R^4 are each methyl or ethyl, and X is one equivalent of a non-phytotoxic anion.

10. A method for stunting the growth of a crop selected from the group consisting of cotton, peanut, sunflower, soybean and pot plants; which comprises applying to the crop a stunting effective amount of a compound as defined in claim 1.

4,221,583

N-PHOSPHONOMETHYLGLYCINONITRILE AND CERTAIN DERIVATIVES THEREOF

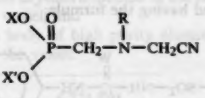
Van R. Gaertner, Ballwin, and Wendell G. Phillips, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,545

Int. Cl.[2] C07C *121/42;* **A01N** *9/36;* **C07C** *120/00*

U.S. Cl. 71—86 **20 Claims**

1. A compound of the formula



wherein R represents hydrogen, X represents hydrogen and X' represents hydrogen or an herbicidally acceptable cation.

2. The compound as defined in claim 1 wherein X' is hydrogen.

10. A herbicidal method which comprises applying to plants a herbicidally effective amount of a compound of claim 2.

4,221,584

HERBICIDAL AND PLANT-GROWTH-REGULATING N-(HETEROCYCLYL)-METHYLACETANILIDES

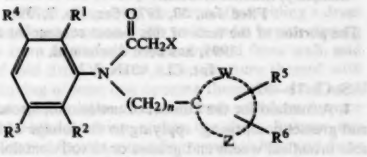
Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 9, 1979, Ser. No. 10,877

Int. Cl.[2] A01N *9/00;* **C07D** *261/06, 263/32, 275/02*

U.S. Cl. 71—88 **19 Claims**

1. A compound of the formula



wherein R^1 is alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo, nitro, hydroxy, alkoxyalkyl of 2 to 6 carbon atoms, fluoro, bromo, chloro or iodo; R^2,R^3 and R^4 are independently selected from hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo, nitro, hydroxy, alkoxyalkyl of 2 to 6 carbon atoms, fluoro, bromo, chloro or iodo; R^5 and R^6 are independently selected from hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms; alkoxyalkyl of 2 to 6 carbon atoms, phenyl and phenyl substituted with 1 to 5 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; X is fluoro, bromo, chloro, iodo or alkoxy of 1 to 3 carbon atoms; W and Z are hetero atoms in an aromatic 5-membered ring wherein Z is nitrogen and W is sulfur or oxygen; and n=0, 1 or 2.

13. A method for controlling undesirable vegetation which comprises applying to said vegetation or its growth medium an herbicidally effective amount of a compound defined in claim 1.

4,221,585

N-[(2,6-DIMETHOXYPYRIMIDIN-4-yl)]AMINOCARBONYL BENZENE SULFONAMIDES AND THEIR HERBICIDAL COMPOSITIONS AND METHODS OF USE

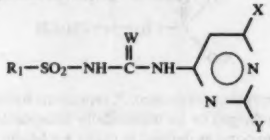
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 834,828, Sep. 19, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 929,544

Int. Cl.[3] A01N *43/48;* C07D *239/69*

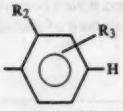
U.S. Cl. 71—92 36 Claims

1. A compound having the formula:



wherein

R_1 is



R_2 is nitro, trifluoromethyl, chlorine or methyl;

R_3 is hydrogen;

W is independently oxygen or sulfur; and

X and Y are methoxy or an agriculturally suitable salt thereof.

17. A method for controlling the growth of undesired vegetation which comprises applying to the locus of the undesired vegetation an effective amount of a compound of claim 1.

4,221,586

IMIDAZOLINYL BENZAMIDES AS HERBICIDAL AGENTS

Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

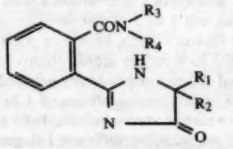
Filed Jan. 30, 1979, Ser. No. 7,739

The portion of the term of this patent subsequent to Oct. 23, 1995, has been disclaimed.

Int. Cl.[2] A01N *9/22*

U.S. Cl. 71—92 9 Claims

1. A method for the control of undesirable broadleaf weeds and grasses comprising, applying to the foliage of the undesirable broadleaf weeds and grasses or to soil containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having the structure:



wherein R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl, and when R_1 and R_2 are taken together with the carbon to which they are attached they may form cycloalkyl C_3–C_6 optionally substituted with methyl; R_3 and R_4 each individually represent hydrogen, alkyl C_1–C_4, alkenyl C_3–C_5, alkynyl C_3–C_5, or benzyl; and the optical isomers thereof.

4,221,587

METHOD FOR MAKING METALLIC GLASS POWDER

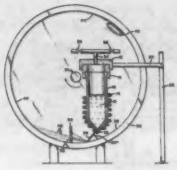
Ranjan Ray, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 23, 1979, Ser. No. 23,412

Int. Cl.[2] B22D *23/08*

U.S. Cl. 75—0.5 C 7 Claims

1. A method for making metallic glass powder comprising the steps of: forming a jet of molten, glass forming metal alloy, and impinging the jet against the inner surface of a rotating cylindrical chill body in the direction of movement of the surface at an acute angle within the range of from about 5° to



45° to effect atomization of the molten alloy into a stream of droplets of molten alloy, permitting the droplets to impinge on the inner surface of the chill body to be rapidly quenched to form solid particles of metallic glass powder, and removing the metallic glass powder from the inner surface of the chill body.

4,221,588

OXIDATION ROASTING OF ORE

George R. Grimes, deceased, late of Burgettstown, Pa. (by Mary E. Grimes, executrix), assignor to Amax Inc., Greenwich, Conn.

Continuation of Ser. No. 859,726, Sep. 22, 1969, abandoned. This application Jan. 2, 1975, Ser. No. 538,181

Int. Cl.[2] C22B *1/02, 1/10*

U.S. Cl. 75—7 8 Claims

1. In a method of controlling the oxidation roasting temperature of molybdenum disulfide to MoO_3 in a vertically disposed multi-hearth roasting furnace in which molybdenum disulfide is continually fed through a plurality of heated roasting hearths starting from the top hearth of the furnace and passing from one hearth to another through the bottom hearth thereof, during which roasting proceeds exothermically with the evolution of SO_2, such that selected upper level hearths exhibit a higher roasting temperature than lower level heaths and such that at least one of said upper hearths requires controlling to a desired roasting temperature, the improvement which comprises,

establishing a flow of said molybdenum disulfide through said multi-hearth furnace while subjecting said molybdenum disulfide to roasting,

feeding water under pressure to a first pressure-regulating water valve adapted to provide water at substantially constant pressure downstream thereof,

causing said water at said constant pressure to pass through a second water valve located downstream thereof and then through at least one nozzle directed into said at least one of said selected upper roasting hearth of said multi-hearth roasting furnace for spraying a mixture of water droplets and air therein,

said second water valve adjusting the water fed to said at least one nozzle to a predetermined pressure,

feeding air under pressure to a first pressure-regulating air valve adapted to provide air at substantially constant pressure downstream thereof, causing said air to pass through a second air valve located downstream thereof and then through said same at least one nozzle,

said second air valve adjusting the air fed to said at least one nozzle to a predetermined pressure,

such that both said water and said air are fed under controlled predetermined pressures to said nozzle to produce an air-water droplet spray mixture in said at least one upper roasting hearth continually and automatically sensing the temperature in said at least one roasting hearth,

and selectively varying the ratio of the water and air fed together to said nozzle by varying the pressure of one relative to the other by automatically adjusting either

said second water valve or said second air valve in response to a difference in temperature between the temperature sensed and the desired roasting temperature of said molybdenum disulfide in said at least one upper hearth at substantially said desired temperature.

4,221,589

PROCESS FOR MELTING ALUMINUM OR ITS ALLOYS IN AN INDUCTION MELTING FURNACE

Ferdinand H. J. Verstraelen, Constitutiestraat 16, B-2000 Antwerpen, Belgium

Filed Apr. 26, 1979, Ser. No. 33,594

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818495

Int. Cl.² C22B *4/02*

U.S. Cl. 75—10 R **5 Claims**

1. In a process for melting aluminum or aluminum alloys in an induction melting furnace of the channel type, in which the melting channels are to be protected by cryolithe against the attack of the melt and wherein a gas or gas mixture is introduced into the melting channels of the inductor units, said gas containing halogens or compounds capable of splitting off halogens, the improvement comprising forming the cryolithe in the melt by providing that the melting charge contains an amount of sodium of at least 15 ppm, and an amount of at least 15 ppm of a member selected from the group consisting of lithium, calcium, potassium and a mixture of at least two of these members, and wherein the gas introduced is fluorine.

4,221,590

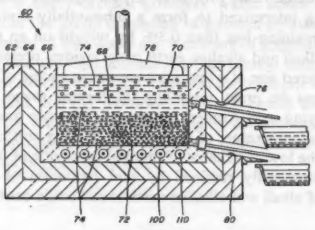
FRACTIONAL CRYSTALLIZATION PROCESS

Robert K. Dawless, Monroeville; Robert E. Graziano, Arnold, and Arthur A. Bonarett, Creighton, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 26, 1978, Ser. No. 973,138

Int. Cl.² C22B *21/02*

U.S. Cl. 75—68 R **10 Claims**



1. An improved method for purifying impure aluminum by fractional crystallization, comprising the steps of:

(a) providing a body of impure aluminum in a molten state in a vessel for purposes of purification;

(b) removing heat at the surface of the body of impure aluminum at a controlled rate for purposes for removing eutectic impurities therefrom by forming aluminum crystals therein, said crystals having a higher purity than the remaining liquid aluminum constituting the remaining fraction having impurities concentrated therein, the crystals being displaced away from the heat removing surface;

(c) collecting high purity aluminum crystals in a bed adjacent the bottom of the vessel;

(d) introducing heat at a controlled rate to the body adjacent the bottom thereof for purposes of melting a portion of the crystals collected adjacent the bottom of the vessel whereby the melted portion is moved through the bed of crystals by action of crystal being displaced away from the heat removing surface and whereby the melted portion washes impurities from the surface of the crystals collected in the bottom of the vessel and carries the impurities towards the upper part of the body to concentrate the impurities there and thereby permits liquid aluminum of a higher purity level than the aforesaid remaining fraction to be in contact with the high purity aluminum crystals collected in the bottom of the vessel;

(e) subjecting the high purity aluminum crystals in the bottom of the vessel to a tamping action for purposes of squeezing liquid aluminum and impurities therefrom;

(f) removing liquid aluminum having impurities concentrated therein without removal through the bed of high purity aluminum crystals collected in the bed adjacent the bottom of the vessel; and

(g) recovering a body of high purity aluminum crystals in the bottom of the vessel.

4,221,591

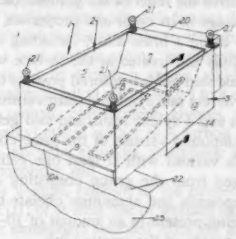
METHOD FOR RECLAIMING GALVANIZING QUALITY ZINC ALLOY FROM CONTINUOUS GALVANIZING LINE TOP DROSS

John C. Hogan, Greenhills, and Alan F. Gibson, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Feb. 22, 1979, Ser. No. 14,127

Int. Cl.² C22B *19/02, 19/30*

U.S. Cl. 75—86 **2 Claims**



1. A method of reclaiming galvanizing quality zinc alloy from the top dross of the coating pot of a continuous galvanizing line, said method comprising the steps of providing a dross furnace having front, rear and side walls and a hearth sloping downwardly from said rear wall toward said front wall, said front wall of said dross furnace at the juncture thereof with said hearth having at least one opening therein so sized as to permit the passage of molten zinc alloy from said dross furnace therethrough while retaining within the dross furnace any spongy slag formed therein, providing means to heat said dross furnace in a controlled fashion, locating said dross furnace at the edge of said galvanizing line coating pot with said front wall thereof and said at least one opening therein overhanging said coating pot, continuously charging said dross furnace with top dross from said coating pot, maintaining said dross furnace at a temperature of from about 460° C. to about 850° C., causing molten zinc alloy reclaimed from said top dross to flow through said at least one opening in said dross furnace front wall directly into said coating pot, providing a residence time for said top dross within said dross furnace of up to about two hours and periodically removing from said dross furnace spongy slag formed therein.

4,221,592

GLASSY ALLOYS WHICH INCLUDE IRON GROUP ELEMENTS AND BORON

Ranjan Ray, Morristown, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 590,532, Jun. 26, 1975, Pat. No. 4,067,732. This application Sep. 2, 1977, Ser. No. 830,232

The portion of the term of this patent subsequent to Jan. 10, 1996, has been disclaimed.

Int. Cl.² C22C *19/00, 38/00*

U.S. Cl. 75—122 **7 Claims**

1. A primarily glassy alloy consisting essentially of the composition $M_aM'_bM''_cB_d$, where M is one element selected from

the group consisting of iron, cobalt and nickel, M' is one or two elements selected from the group consisting of iron, cobalt and nickel other than M, M" is at least one element selected from the group consisting of vanadium, manganese molybdenum, tungsten, niobium and tantalum, "a" ranges from about 40 to 85 atom percent, "b" ranges from 0 to about 45 atom percent, "c" ranges from 0 to about 20 atom percent and "d" ranges from about 26 to 28 atom percent, with the proviso that "b" and "c" cannot all be zero simultaneously.

4,221,593

GOLDEN-COLORED PRINTING INK

Hirotugu Kubo, Osaka, Japan, assignor to Mitsuboshi Printing Ink Co., Ltd., Osaka, Japan

Filed Sep. 12, 1978, Ser. No. 941,631
Claims priority, application Japan, Sep. 12, 1977, 52-110117
Int. Cl.[2] C09D *11/02, 11/10*
U.S. Cl. 106—20 7 Claims

1. A golden-colored printing ink consisting essentially of a golden-colored powder and vehicle comprising a combination of a synthetic resin varnish; a gel varnish; a tung oil compound varnish or a petroleum solvent, and an amine compound which serves to improve the relief of the golden-colored powder and to prevent change in its color and properties, said golden-colored powder being a brass alloy, including aluminum in the form of fine foils and treated at the surface with a fatty acid, said vehicle and said golden-colored powder being in the form of a sol and wherein said synthetic resin varnish is composed of a phenol resin and a xylene resin, and said gel varnish is composed of a compound varnish of the same component as said synthetic resin varnish with at least one gelling agent added thereto selected from the group consisting of aluminum alcoholate compounds and aluminum chelate compounds, said gel varnish being present in an amount of 10–16% by weight, based on the weight of the printing ink.

4,221,594

MATERIAL COMPOSITION FOR FIRED CERAMIC ARTICLES HAVING A HIGH DEGREE OF POROSITY AND CRUSHABILITY CHARACTERISTICS

Charles D. Greskovich, Schenectady; Frederic J. Klug, Amsterdam, and Wayne D. Pasco, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1977, Ser. No. 840,023
Int. Cl.[2] C04B *00/00*
U.S. Cl. 106—40 R 13 Claims

1. A material composition suitable for use in making fired compacts consisting of

100 parts by weight of a ceramic material which is an alumina-based ceramic compound which has a minimum temperature at which a liquid phase forms between the compound and alumina which is greater than 1800° C., and

a reactant fugitive filler mixed in the ceramic in a given molar ratio of reactant to alumina, which provides a sufficient reactant at an elevated temperature to chemically reduce the alumina of the ceramic material to produce at least one volatile species which produces an increased degree of continuous porosity in the ceramic compact, wherein

the alumina-based ceramic compound has the general formula $MO.NAl_2O_3$, and

M is Na_2, Ca, Sr, or Ba,

N is from 9 to 11 when M is Na_2, and

N is 6 when M is Ca, Sr, or Ba,

the reactant fugitive filler is one selected from the group consisting of carbon, aluminum, aluminum carbide, aluminum oxycarbide, boron and boron carbide, and

the particle size of the ceramic material is less than about 100 μm.

4,221,595

INSULATING HOT TOPPING MATERIAL

Gerald R. Zebrowski, Twinsburg, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Oct. 22, 1975, Ser. No. 624,696
Int. Cl.[3] C04B *35/52*
U.S. Cl. 106—56 2 Claims

1. A particulate insulating hot topping material consisting essentially of:

a. from 30 to 82% by weight of a refractory filler;

b. from 0 to 25% by weight of a light weight insulating filler;

c. from 4 to 50% by weight of a carbonaceous material;

d. from 0 to 3% by weight of a liquid hydrocarbon dust inhibitor;

e. a quantity of fiber dust inhibitor sufficient to maintain the integrity of said hot topping material.

4,221,596

METHOD FOR LOW PRESSURE FORMING OF FUSED SILICA COMPOSITIONS AND RESULTANT BODIES

Hal H. Rice, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1976, Ser. No. 729,000
Int. Cl.[2] C04B *35/14*
U.S. Cl. 106—69 10 Claims

1. In a method for low pressure forming a contoured refractory body having fused silica as its principal ingredient with resulting low coefficient of thermal expansion, the steps of mixing fused silica of −325 mesh size in the amount of about 70 to 85 parts by weight with clay in the amount of about 15 to 30 parts by weight, deionized water in the amount of about 20 to 28 parts by weight and from about 0.1 to 0.6 parts by weight of one or more of the organic plasticizers selected from the group consisting of hydroxyethyl cellulose, hydroxypropyl cellulose, ethylene oxide resin, propylene glycol alginate, said constituents being intermixed to form a substantially homogeneous batch containing less than 0.3% by weight on an after-fired basis of alkali and alkaline earth metal oxides, pressing blanks of the desired size at a low pressure not in excess of 1500 psia in a porous die press, removing the formed shape from said press, drying said formed shape and sintering said formed shape at a temperature of about 1123° C. for a period of about 6 hours, the low coefficient of thermal expansion of fused silica being substantially retained by said limitation of the total amount of alkali and alkaline earth metal oxide content.

4,221,597

ADDITIVE FOR IMPROVED PERFORMANCE OF SILICATE CEMENT

William A. Mallow, San Antonio, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 11, 1979, Ser. No. 29,097
Int. Cl.[2] C09D *1/02, 1/04*
U.S. Cl. 106—74 25 Claims

1. A cement composition comprising:

(a) a spray-dried hydrated alkali metal silicate powder selected from the group consisting of sodium silicate and potassium silicate having a weight ratio of SiO_2/alkali metal oxide in the range of from about 2.4/1 to about 3.22/1;

(b) a silica polymer-forming agent selected from the group consisting of sodium silicofluoride and potassium silicofluoride; and

(c) an adhesive agent, sulfate ion inhibitor selected from the group consisting of sodium acetate and urea.

4,221,598

PROCESS FOR THE PRODUCTION OF STEAM-HARDENED GAS CONCRETE

Heinz Doblinger, Emmering, Fed. Rep. of Germany, assignor to Hebel Gasbetonwerk GmbH, Emmering-Furstenfeldruck, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,362

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1977, 2709858

Int. Cl.[3] C04B 7/02

U.S. Cl. 106—87 22 Claims

1. A process for the production of an unprocessed mixture for processing into steam-hardened gas concrete comprising:

mutually grinding together at least one silicate containing aggregate and at least one calcium sulphate constituent to form a ground-up mixture;

employing a sufficient amount of said calcium sulphate constituent in said mixture such that the total sulphate content of the end product, expressed as SO_3, is from about 2 to about 5% by dry weight with no annealing loss; and

combining said ground-up mixture with a binder consisting of lime and cement to form an unprocessed mixture, the amount of lime exceeding the amount of cement.

4,221,599

PRESSURE COMPACTING OF SETTABLE GYPSUM/PLASTER COMPOSITIONS

Michel Deleuil, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 876,492, Feb. 9, 1978. This application Jan. 31, 1979, Ser. No. 8,070

Claims priority, application France, Jan. 31, 1978, 78 2598

Int. Cl.[2] C04B 11/14

U.S. Cl. 106—111 27 Claims

1. A settable molding composition, which comprises a particulate, intimate admixture of (1) finely divided, powdery plaster, (2) a finely divided powdery water donor therefor selected from the group consisting of gypsum powder having a given content of free water and a mixture of gypsum powder and free water, the total amount of water present being at least that amount stoichiometrically required for complete setting of the admixture, and (3), uniformly homogeneously distributed therethrough, a minor amount of a finely divided waterproofing agent, said agent being an essentially water-insoluble metallic salt of an organic fatty acid.

4,221,600

LIQUID DEFOAMING COMPOSITION

Donald E. Alexander, North Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,639

Int. Cl.[2] B01D 19/02; C08L 97/02

U.S. Cl. 106—123 TQ 18 Claims

1. A liquid foam control composition comprising:

(a) from about 60% to about 90% by weight of a liquid aliphatic hydrocarbon having a boiling point of at least 150° F.;

(b) from about 7% to about 36% by weight of an emulsifier comprising an ester of a polyethylene glycol having a molecular weight greater than about 200 and a fatty acid;

(c) from about 1% to 8% by weight of an aliphatic alcohol having from 20 to 32 carbon atoms;

(d) from about 0.5% to about 5% by weight of a high molecular weight hydrocarbon; and

(e) up to about 6% by weight of an alcohol solvent having from 1 to 4 carbon atoms;

said composition being characterized as excluding a sulfonic acid component.

4,221,601

PACKAGED PIGMENT PASTES AND PROCESS FOR COLORING AND TONING WATER-DILUTED COATING AGENTS

Friedrich Augustin, Frechen, and Lothar Bartling, Giessen, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 6, 1977, Ser. No. 757,199

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1976, 2602736

Int. Cl.[2] C08L 1/08

U.S. Cl. 106—171 10 Claims

1. A film pack consisting of a bag of a water-soluble film selected from the group consisting of polyvinyl alcohol or carboxyalkyl cellulose in film form, said film being folded to form containers and sealed on all sides, and enclosed therein a pigment paste consisting essentially of the components:

(I) at least one pigment selected from the group consisting of inorganic pigments, organic pigments and mixture thereof;

(II) at least one extender;

(III) 10–80% be weight, based on the total weight of components (I) and (II), of a component selected from the group consisting of monohydric primary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric secondary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric tertiary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric branched alkanols having 1 to 4 carbon atoms, alkylene glycols, alkylene glycol monoalkyl ethers with 1 to 4 carbon atoms in the alkyl radical, polyalkylene glycols, polyalkylene glycol monoalkyl ethers with 1 to 4 carbon atoms in the alkyl radical, alicyclic alcohols, araliphatic alcohols, and unsaturated alcohols; and

(IV) 5–20% by weight, relative to the content of components (I) and (II) of at least one of wetting agents, dispersing agents or emulsifiers selected from the group consisting of fatty alcohols, fatty alcohol sulphonates, alkyl-aryl-sulphonates, alkyl-aryl-polyglycol ethers, fatty acid amines, mono-di- and tri-alkanolamines, fatty alcohol oxethylates, fatty acid alkanolamides, alkali metal salts of polyacrylic acids, soya lecithin and polyethylene oxide, which are different from and soluble in component (III),

whereby said water-soluble film is diffusion-tight in respect to the solvents in the pigment paste and whereby said brittle water-soluble film becomes more flexible and more resistant to mechanical stress by the presence of component III with component IV in said pigment paste forming a plasticizing of said water-soluble film so that said bag is stored without coagulation and agglomeration and that said bag dissolves in a water-diluted coating agent in which said bag is compatible and forms a homogeneous coating of uniform color after curing or drying said coating.

10. In a process for coloring and toning a water-diluted coating agent with a pigment paste, the improvement which consists of immersing at least one film pack in said water-diluted coating agent, said film pack consisting of a bag of a water-soluble film selected from the group consisting of polyvinyl alcohol or carboxyalkyl cellulose in film form, said film being folded to form containers and sealed on all sides, and enclosed therein a pigment paste consisting essentially of the components:

(I) at least one pigment selected from the group consisting of inorganic pigments, organic pigments and mixture thereof;

(II) at least one extender;

(III) 10–80% by weight, based on the total weight of components (I) and (II), of a component selected from the group consisting of monohydric primary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric secondary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric tertiary aliphatic straight chain alkanols having 1 to 4 carbon atoms, monohydric branched

alkanols having 1 to 4 carbon atoms, alkylene glycols, alkylene glycol monoalkyl ethers with 1 to 4 carbon atoms in the alkyl radical, polyalkylene glycols, polyalkylene glycol monoalkyl ethers with 1 to 4 carbon atoms in the alkyl radical, alicyclic alcohols, araliphatic alcohols, and unsaturated alcohols; and

(IV) 5–20% be weight, relative to the contents of components (I) and (II) of at least one of wetting agents, dispersing agents or emulsifiers selected from the group consisting of fatty alcohols, fatty alcohol sulphonates, alkyl-aryl-sulphonates, alkyl-aryl-polyglycol ethers, fatty acid amines, mono-, di- and tri-alkanolamines, fatty alcohol oxethylates, fatty acid alkanolamides, alkali metal salts of polyacrylic acids, soya lecithin and polyethylene oxide, which are different from and soluble in component (III);

said film pack dissolving in said water-diluted coating agent after being immersed in said coating agent and distributing said pigment paste in said coating agent, so that said coating agent forms a compatible and homogeneous coating of uniform color after curing or drying said coating.

4,221,602

SIZE FOR FORMING GLASS FIBERS HAVING A REDUCED TENDENCY TO GIVE GUMMING DEPOSITS

Douglas M. Walser, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 946,996, Sep. 29, 1979. This application May 16, 1979, Ser. No. 39,472
Int. Cl.[2] C03C *25/02*
U.S. Cl. 106—211 10 Claims

3. A sizing composition for glass fibers to produce sized glass fibers with a reduced tendency to form gummy deposits on fabrication machinery under high relative humidity conditions, comprising in percent by weight of the total aqueous sizing composition:

a. about 50 to about 65 percent of a starch having cross-links that have been partially cooked to within about 50 percent of complete cooking;

b. 4 to 52 percent by weight of the salt of a polyamino functional polyamide resin, said polyamino functional polyamide resin salt being formed from the condensation reaction product of a polycarboxylic acid and a polyamine, said polyamine having greater than 2 amine groups per molecule and a carboxylic acid having 1 to 5 carbon atoms;

c. 5 to 25 percent of a wax selected from the group consisting of animal waxes, vegetable waxes, mineral waxes, and synthetic waxes;

d. 9 to 77 percent of a fatty triglyceride.

4,221,603

MIX DESIGN METHOD FOR ASPHALT PAVING MIXTURES

Jose A. Trujillo, Holbrook, Ariz., assignor to Riguez Associates, a Limited Partnership, Bethesda, Md.

Continuation-in-part of Ser. No. 764,336, Jan. 29, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,390
Int. Cl.[2] C08L *95/00*
U.S. Cl. 106—281 R 5 Claims

1. A mix design method for an asphalt paving mixture that includes coarse aggregates, fine aggregates, a predetermined quantity of asphalt cement, and a predetermined volume of voids, said method being useful for determining a specific gradation of coarse and fine aggregates to be combined in the mixture so that the mixture, when compacted, contains said predetermined volume of voids, which method comprises:

(a) Demarcating the aggregates to define coarse and fine aggregates,

(b) Mixing a reference sample of said fine aggregates with said predetermined quantity of asphalt cement,

(c) Compacting said reference sample,

(d) Determining a Riguez Index for said compacted reference sample,

(e) Generating a Riguez Value function as a function of gradation of coarse aggregates and fine aggregates, and

(f) Comparing the Riguez Value function of step (e) with the Riguez Index of step (d) and selecting a gradation wherein the Riguez Value function equals the Riguez Index within a predetermined range whereby an actual mixture of aggregates of the selected gradation with said predetermined quantity of asphalt cement will contain, after compaction, said predetermined volume of voids.

4,221,604

HERMETIC SEALS

Agustin M. Chirino, Elmira, and Gerald H. Yost, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 22, 1978, Ser. No. 908,003
Int. Cl.[3] C08K *3/10, 3/40*
U.S. Cl. 106—286.5 8 Claims

1. A sealing mixture for producing a mechanically strong, hermetic seal between materials being sealed together thereby, which consists of glass frit, a metal powder and a vehicle,

the glass frit having a softening point of less than 750° C.,

the metal powder being selected from the group consisting of aluminum, antimony and zirconium, the amount of aluminum powder being limited to from 2–40 wt.%, the amount of antimony powder being limited to from 2–23 wt.% and the amount of zirconium powder being limited to from 2–17 wt.% of the glass frit plus metal powder,

the frit having a coefficient of thermal expansion sufficiently compatible with the materials being sealed and the metal powder selected being combined with the frit in an effective amount such that the mixture, when reacted, will yield a seal characterized by a coefficient of thermal expansion closely matching or similar to those of the materials being sealed and by a use temperature of up to 1000° C. when antimony or zirconium metal is chosen or >1000° C. when aluminum metal is chosen.

4,221,605

SULFUR FOAM PROCESS

Gar L. Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 532,100, Dec. 12, 1974, abandoned, which is a division of Ser. No. 438,508, Jan. 31, 1974, Pat. No. 013,887,504, which is a continuation-in-part of Ser. No. 344,694, Mar. 26, 1973, Pat. No. 3,892,686, which is a continuation-in-part of Ser. No. 253,144, May 15, 1972, abandoned. This application Jan. 16, 1976, Ser. No. 649,620
The portion of the term of this patent subsequent to Jun. 3, 1992, has been disclaimed.
Int. Cl.[2] C09K *3/00*
U.S. Cl. 106—287.24 6 Claims

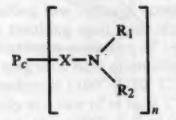
1. A process for producing a sulfur foam containing at least 50 weight percent sulfur, which comprises (a) melting a material which is prepared by steps comprising contacting and reacting molten sulfur with 0.001 to 1.0 g. mol acid equivalents of an organic protonic acid per 100 grams of sulfur wherein the organic protonic acid is reactive with molten sulfur so as to incorporate the organic acid with sulfur to form a sulfur-organic acid adduct containing protonic acid groups; and (b) contacting and reacting the protonic acid groups of said material with an organic polyisocyanate to obtain the sulfur foam, and wherein said contacting and reacting are carried out in a liquid phase.

4,221,606
PHTHALOCYANINE PIGMENT COMPOSITIONS

Takenori Funatsu; Yoichi Inuzuka; Tetsuo Mishina; Kenji Kitamura, and Ataru Chiba, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

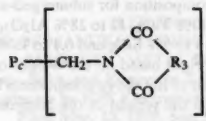
Filed Oct. 25, 1978, Ser. No. 954,502
Claims priority, application Japan, Oct. 28, 1977, 52/128728
Int. Cl.[2] C08K 5/00
U.S. Cl. 106—288 Q 8 Claims

1. A phthalocyanine pigment composition comprising (A) 100 parts by weight of phthalocyanine pigment, (B) a phthalocyanine derivative selected from the group consisting of compounds (I) and (II) represented by the following general formulae, respectively,



(I)

and



(II)

wherein P_c is the n-valent residue of a metal-free or metal phthalocyanine, X is $-(CH_2)_m-$, $-CH_2NH(CH_2)_l-$, $-CH_2NHCO(CH_2)_l-$ or $-SO_2NH(CH_2)_l-$, R_1 is a hydrogen atom, alkyl group or hydroxyalkyl group, R_2 is an alkyl group, cycloalkyl group, hydroxyalkyl group, aminoalkyl group or aralkyl group, R_1 and R_2 may be combined together in this case,

may be substituted by a saturated five-, six- or seven-membered heterocyclic ring having oxygen, nitrogen and/or sulfur atoms as other members of the ring, R_3 is a substituted or unsubstituted ortho-phenylene group, and l, m and n are an integer of 1–4, 1–2 and 1–8 respectively, and (C) a polyvalent metal salt of an anionic surface-active agent wherein the polyvalent metal is barium, calcium, zinc, strontium or manganese, the compounds (B) and (C) being comprised in a molar ratio of 1:0.1–5 and totalling 0.5–30 parts by weight, said composition being formed by mixing said phthalocyanine derivative with said polyvalent metal salt of an anionic surface-active agent and thereafter mixing the resulting blend with said phthalocyanine pigment.

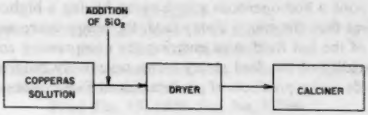
4,221,607
CALCINING EFFECT OF SYNTHETIC IRON OXIDE

Theodore Dickerson, Monroe, La., assignor to Cities Service Company, Tulsa, Okla.

Filed Mar. 23, 1979, Ser. No. 23,478
Int. Cl.[2] C09C 1/24
U.S. Cl. 106—304 3 Claims

1. A method of improving the calcining effect of synthetic iron oxide prepared from purified soluble iron salts, comprising the steps of:

(a) adding a silica-containing material selected from the group consisting fumed silica and precipitated silica to the soluble iron salt solution, the amount of silica-containing material varying from about 0.25 to about 10 wt. %, based upon the weight of the resultant iron oxide product, and the particle range of the added silica-containing material being 4–20 millimicrons,



(b) drying the mixture, and

(c) calcining the mixture of step (b) at a temperature range of about 1325°–1600° F. (718°–871° C.).

4,221,608
RUBBER-REINFORCING BLACKS

Joseph A. Beckman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 25, 1972, Ser. No. 283,878
Int. Cl.[2] C09C 1/44, 1/56
U.S. Cl. 106—307 19 Claims

1. A process for the preparation of reinforcing fillers suitable for use in elastomeric compositions comprising in combination, the steps of:

a. destructively distilling scrap polymeric compositions at from about 800° F. to about 2,800° F. to produce carbonaceous char, gases and liquids,

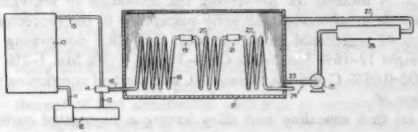
b. grinding said carbonaceous char in a fluid energy mill to an average particle size of less than about 2.5 microns and at least 99 percent by weight less than 5 microns under a nonoxidizing atmosphere at a temperature of from about 350° F. to about 800° F.,

c. coating the individual particles of said ground carbonaceous char with an organic liquid barrier having a Saybolt Universal viscosity of from about 10 to about 75 seconds at 100° F., said particles being maintained under a nonoxidizing atmosphere until they are substantially completely coated with said organic liquid.

4,221,609
CONTINUOUS PRODUCTION OF STARCH HYDROLYSATES

John F. Hughes, Dollard des Ormeaux, Canada, assignor to Kirby, Shapiro, Eades and Cohen, Ottawa, Canada

Continuation-in-part of Ser. No. 868,921, Jan. 12, 1978, Pat. No. 4,137,094, which is a continuation of Ser. No. 767,794, Feb. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 667,170, Mar. 15, 1976, abandoned. This application Dec. 15, 1978, Ser. No. 959,497
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.[2] C13K 1/06
U.S. Cl. 127—38 12 Claims



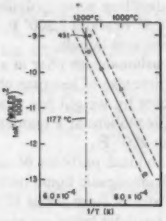
1. A process for producing starch hydrolysates comprising continuously moving an aqueous acidic starch slurry feed through a confined preheat zone at a pressure of at least 300 psi to raise the temperature of the slurry to at least 100° C., continuously forcing the hot fluid mass emerging from the preheat zone through an elongated compressing zone, said elongated compressing zone having a cross-sectional area less than 25% of the cross-sectional area of the preheat zone and a length :

diameter ratio of at least 4:1, continuously receiving material emerging from the compressing zone in the form of a fine spray or mist including water vapor in a confined zone of reduced pressure and continuously collecting from said reduced pressure zone a homogeneous starch syrup having a higher solids content than the starch slurry feed, the temperature and pressure of the hot fluid mass entering the compressing zone and the acidity of the feed slurry being selectively controlled to provide syrup products of predetermined D.E. values.

4,221,610
METHOD FOR HOMOGENIZING ALLOYS SUSCEPTIBLE TO THE FORMATION OF CARBIDE STRINGERS AND ALLOYS PREPARED THEREBY

David N. Braski, Oak Ridge, and James M. Leitnaker, Kingston, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 24, 1978, Ser. No. 880,919
Int. Cl.[2] C22C 19/00; C22F 1/10
U.S. Cl. 148—11.5 N 6 Claims



1. A method for preventing the formation of segregated carbide precipitates in an alloy susceptible to the reprecipitation of segregated metal carbides, said alloy comprising by weight 13–15% Mo, 6–8% Cr, 0–2% Fe, 0–2% Mn, 1.8–2.2% Ti, 0.05–0.08% C and the balance Ni, said method comprising the steps of:

(a) first annealing said alloy having a segregated carbide phase at a temperature above the minimum single phase temperature for a time sufficient to dissolve said metal carbides and provide a single phase alloy; and

(b) further annealing said single phase alloy at a temperature above the minimum single phase temperature for a time, at least three-quarters hour, to prevent the precipitation of segregated metal carbides upon subsequent aging or thermomechanical treatment, said minimum single phase temperature being above 1205° C.

5. A method for preventing the formation of segregated carbide precipitates in an alloy susceptible to the reprecipitation of segregated metal carbides, said alloy comprising by weight 12–16% Mo, 5–9% Cr, 0–3% Fe, 0–3% Mn, 1–2% Ti, 0.02–0.08% C and the balance Ni, said method comprising the steps of:

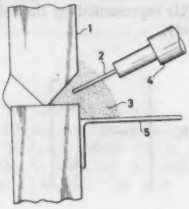
(a) first annealing said alloy having a segregated carbide phase at a temperature above the minimum single phase temperature for a time sufficient to dissolve said metal carbides and provide a single phase alloy; and

(b) further annealing said single phase alloy at a temperature above the minimum single phase temperature for a time, at least three-quarters hour, to prevent the precipitation of segregated metal carbides upon subsequent aging or thermomechanical treatment, said minimum single phase temperature being above 1177° C.

4,221,611
NON-FUSED FLUX COMPOSITION FOR SUBMERGED-ARC WELDING

Kyoichi Nagano, Kamakura; Toshihiko Takami, Ebina, and Kunio Koyama, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 962,568
Claims priority, application Japan, Jul. 17, 1978, 53-86899
Int. Cl.[2] B23K 35/34
U.S. Cl. 148—26 3 Claims



1. A non-fused flux composition for submerged-arc welding which comprises 13 to 30% TiO_2, 12 to 28% Al_2O_3, 10 to 26% CaF_2, 24 to 40% MgO, 3 to 9% SiO_2 and 0.1 to 1.0% B_2O_3, all percentages being by weight based on the weight of the composition, the total content of the above components being 70 to 97% by weight based on the weight of the composition.

4,221,612
GRINDING MEMBERS

Michel Thome, Nouzonville, France, assignor to Acieries Thome Cromback, Paris, France

Filed Oct. 13, 1978, Ser. No. 951,107
Claims priority, application France, Oct. 14, 1977, 77 31045
Int. Cl.[2] C21D 7/14
U.S. Cl. 148—35 11 Claims

1. A forged grinding member comprising white cast iron containing chromium, the structure of which comprises at least one member of the group consisting of a solid martensitic and austenitic solution, having homogenously distributed therein in finely divided form from 5 to 14% by weight chromium carbides of the M_7C_3 type, i.e. from 2 to 7.4% chromium.

6. A method of manufacturing a forged grinding member comprising white cast iron containing chromium, the structure of which comprises at least one member of the group consisting of a solid martensitic and austenitic solution, having homogenously distributed therein in finely divided form from 5 to 14% by weight chromium carbides of the M_7C_3 type, i.e. from 2 to 7.4% chromium, wherein a bar of white cast iron having the specified composition is heated to a first temperature of the order of 900° to 1000° C. facilitating hot cutting in the plastic state, said bar is cut into pieces at this first temperature, said pieces are heated to a second temperature between 1000° and 1150° C., which is chosen in order to cause re-austenisation and complete dissolution of the carbides in the austenitic range, said pieces are forged at said second temperature, and said pieces are then cooled to cause the appearance of perlite at the grain boundaries.

4,221,613

RARE EARTH-COBALT SYSTEM PERMANENT MAGNETIC ALLOYS AND METHOD OF PREPARING SAME

Nobuo Imaizumi, and Kazuo Wakana, both of Tokyo, Japan, assignors to Namiki Precision Jewel Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 6,024
Claims priority, application Japan, Feb. 3, 1978, 53-015518
Int. Cl.[2] H01F *1/02*
U.S. Cl. 148—103 7 Claims

1. Permanent magnetic alloys comprising 11.5–12.5% rare earth components of which 6.3–12% is samarium and 0.5–6.2% is yttrium; 0.2–2.5% hafnium, 19.5–26.5% iron, 7–10.5% copper, and 52–70.7% cobalt, the ranges of the aforesaid components being in atomic ratios.

2. A method of preparing the alloys of claim 1 comprising the steps of melting raw material containing said components, solidifying the resulting melt, pulverizing the resulting ingot into powders having a grain size of 1–50 μm, compacting the powders after magnetic field orientation thereof, sintering said compacted powders at 1160°–1220° C. for 1–10 hours, cooling the sintered body at a rate of at least 1° C./second at least until the temperature is about 900° C., and then annealing the resulting bulk at 750°–900° C.

4,221,614

METHOD OF MANUFACTURING FERROMAGNETIC MAGNETIC METAL POWDER

Minoru Yoda, Saku, and Yasumichi Tokuoka, Komoro, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,142
Claims priority, application Japan, Mar. 14, 1978, 53-28203
Int. Cl.[2] H01F *1/02*
U.S. Cl. 148—105 10 Claims

1. A method of manufacturing a ferromagnetic metal powder formed by a wet reduction process, comprising the steps of continuously drying a slurry of the reduction-formed ferromagnetic metal powder in a non-oxidizing gas atmosphere at a temperature up to 300° C., continuously withdrawing the dried powder under protection of the non-oxidizing gas from said drying step to the following heat treating step while preventing contact of the dried powder with air or excess oxygen, subsequently continuously heat treating the dried powder in a non-oxidizing gas atmosphere at a temperature up to 300° C., continuously withdrawing the powder under protection of the non-oxidizing gas from the heat treating step to the following stabilizing step while preventing contact of the powder with air or excess oxygen, and stabilizing the heat treated powder with an antioxidant solvent.

4,221,615

SOFT-MAGNETIC PLATINUM-COBALT PRODUCTS

Carl Shine, Philadelphia, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 4, 1979, Ser. No. 26,813
Int. Cl.[2] H01F *1/00*
U.S. Cl. 148—120 8 Claims

1. A method for producing a corrosion-resistant platinum-cobalt product having high wear resistance, soft magnetic properties and a specular surface, said method comprising the steps of:

A. solutionizing a platinum-cobalt alloy composition at a temperature above its order-disorder region for a predetermined period;

B. quenching the solution to produce a stock piece whose atomic structure is in the disordered state and therefore possesses soft magnetic properties;

C. machining the stock piece to produce a rough product whose body possesses soft magnetic properties and whose outer layer possesses hard magnetic properties as a consequence of the machining action; and

D. grinding and polishing the rough product to remove the outer layer thereof and to cause the product which is now entirely formed of soft magnetic material to assume its final dimensions, thereby providing the desired finished product.

4,221,616

HYDROPHOBIC EXPLOSIVE COMPOSITION AND METHOD OF MAKING

Colin D. McLean, Mulgrave, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed Jan. 15, 1979, Ser. No. 3,516
Claims priority, application Australia, Jan. 26, 1978, PD3159
Int. Cl.[2] C06B *45/00*
U.S. Cl. 149—2 14 Claims

1. A slurry explosive composition comprising at least one inorganic oxidizing salt, a liquid phase, and fuel material wherein said slurry explosive composition comprises, as a sensitizing agent, (i) hydrophobic particles of a high explosive material which are capable of passing through a screen of 120 B.S. mesh and (ii) bubbles of gaseous material.

4,221,617

SURFACTANT ADDITIVES FOR SOLID PROPELLANTS

Thomas P. Rudy, Saratoga, and Jack K. West, Palo Alto, both of Calif., assignors to United Technologies Corporation, East Hartford, Conn.

Filed Sep. 30, 1966, Ser. No. 583,458
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.5 22 Claims

11. A cast solid propellant grain comprising a cured binder matrix selected from the group consisting of cross-linked polyolefins, polyesters, and polyethers having dispersed therethrough particulate reactive materials and a material selected from the group consisting of heteropolymers of a vinyl lactam and long chain aliphatic acrylate esters, heteropolymers of a vinylpyridine and long chain aliphatic acrylate esters, N-polyamine substituted alkenyl succinimides, and alkaline earth salts of alkarylsulfonic acids.

4,221,618

SLURRY EXPLOSIVES

Melvin A. Cook, 2026 Beneficial Life Tower, Salt Lake City, Utah 84111

Filed Feb. 9, 1979, Ser. No. 11,153
Int. Cl.[2] C06B *45/02*
U.S. Cl. 149—21 15 Claims

1. Aqueous explosive slurries formulated at ambient temperatures comprising:

(a) A dispersion phase having a minimum volume in the range 40 to 60% of the slurry consisting of an aqueous solution saturated with ammonium nitrate and containing sodium nitrate at or near saturation, with or without other soluble fuel, soluble oxidizer, or both,

(b) A disperse phase having a maximum volume of 60 to 40% of the total slurry consisting of from zero to 50% ultra-fine (colloidal size) ammonium perchlorate, from zero to 5% ultra-fine or fine recrystallized sodium nitrate, and from 50 to 100% ammonium nitrate in colloidal (milled), fine ground, fine recrystallized or coarse form, or combinations thereof, at least 30% of the disperse phase being ultra-fine (colloidal) oxidizer solids,

(c) Soluble insoluble, partially soluble, or combinations thereof of fuel sensitizer(s) sufficient to oxygen-balance the explosive slurry at zero to negative oxygen percentage (based on CO_2 and H_2O as the products of detonation) and to sensitize it at or above a level of detonability whereby it propagates completely in an unconfined 5" diameter polyethylene-packaged charge at least six diameters in length with a 2" diameter×4" long case 50/50 pentolite booster or its equivalent with the explosive slurry having a density above 1.10 g/cc at 20° C. or above 1.0 at zero ° C.

(d) Thickened and gelled with guar gum, a cross-linking

agent therefor and density controlled to the desired density by gas generated chemically or introduced mechanically by aeration using variations in the guar gum content, or by incorporation of a low-density porous or aerated solid.

4,221,619

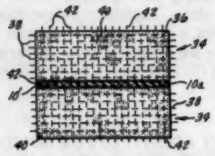
SPONGE CARRIER ADHESIVE PROCESS

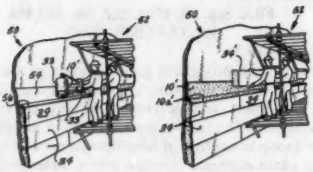
Carl R. Lemons, Westminster, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 24, 1978, Ser. No. 963,296

Int. Cl.[2] B29B *3/00;* **B09B** *3/00;* **B29G** *5/00;* **C09J** *5/00*

U.S. Cl. 156—71 **40 Claims**





1. Adhesive bonding process which comprises impregnating a sponge carrier with a predetermined amount of a liquid polymerizable resin system which is capable of curing at ambient temperature, quickly reducing the temperature of said resin impregnated sponge carrier sufficiently to arrest the curing of said resin system, maintaining said resin impregnated sponge carrier at said reduced temperature for a period of time, placing at least a portion of said last mentioned sponge carrier impregnated with resin between objects to be bonded together, permitting the temperature of said resin impregnated sponge carrier to rise approximately to ambient temperature, causing the resin system to cure and to bond the adjacent surfaces of said objects, substantially without extrusion of any excess of said resin system from the resin impregnated sponge carrier, the resulting sponge carrier containing cured resin forming the bondline between said bonded objects.

4,221,620

METHOD OF PROVIDING SUB-FLOOR WITH DECORATIVE FLOOR PANELS

James A. Milne, Wheeling, Ill., assignor to Pace Incorporated, Northbrook, Ill.

Filed Mar. 13, 1978, Ser. No. 885,472

Int. Cl.[2] B32B *31/04;* **C09J** *5/06*

U.S. Cl. 156—71 **10 Claims**

8. A method of laying a new decorative sheet upon an existing sub-floor having old decorative sheets thereon, including the steps of:

progressively moving a radiant heater from one end over the length of an old sheet with the heater elements facing downwardly to direct heat through the old sheet raising the adhesive thereunder to a release temperature,

progressively manually raising the old sheet from said sub-floor one end first until the whole sheet is removed from the sub-floor,

cleaning any residual adhesive from the sub-floor over the area previously occupied by the removed sheet,

providing a new decorative-surface floor covering sheet for bonding to the sub-floor in said area, with an undercoat of high-viscosity, heat activatable, hot melt adhesive,

placing the heater, elements facing upwardly, and the new sheet, adhesive undercoat facing downwardly, in tandem adjacent said area of the floor,

providing a relative movement of the heater and new sheet starting with one end of the sheet passing over the heater at a selected controlled movement rate to raise the adhesive to an activating temperature,

guiding said one end of the new sheet into proper alignment in the area on the sub-floor and

progressively pressing the sheet to the sub-floor area beginning at said one end and continuing over the length of the sheet as the sheet exits the heater until the adhesive has reduced to bonding temperature.

4,221,621

PROCESS FOR PREPARING A FOAMED ARTICLE OF THERMOPLASTIC RESIN AND A DIE THEREFOR

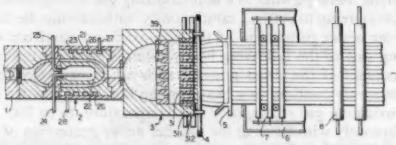
Tatsujiro Seki, Funabashi; Motoji Fujii; Motoshige Hayashi, both of Nara, and Masahiro Tsubone, Koga, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Continuation of Ser. No. 794,314, May 5, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 940,893

Claims priority, application Japan, May 12, 1976, 51-54695

Int. Cl.[2] B29D *27/00;* **B32B** *5/20*

U.S. Cl. 156—78 **2 Claims**



1. A process for preparing a foamed article from extruded strands of thermoplastic resin, said article being free from holes between coalesced strands therein and having a thickness of more than 20 mm, comprising extruding a molten foamable thermoplastic resin through a die having a resin discharge plate provided with a plurality of rows of a plurality of apertures, said resin discharge plate having said apertures located on the same plane of the surface thereof, the rows of apertures being such that all the extruded resin strands are divided, immediately after the resin strands have left the resin discharge face, into a plurality of groups, each group having a thickness of less than 20 mm to form a space therebetween corresponding to a zone void of apertures of the resin discharge plate and being communicated with the ambient atmosphere, said zone void of apertures being of a thickness more than twice the average distance between two adjacent apertures belonging to the same group, and being provided therein with a closed passage for passing a cooling medium therethrough in a direction perpendicular to said apertures to cool the zone; and coalescing thereafter the resin strands to form an integrated article more than 20 mm thick, while the strands are still in a softened state.

2. In a die employed for preparing a foamed article of thermoplastic resin wherein a number of apertures are provided in the resin discharge face of the die, said apertures being located on the same plane of the surface of the resin discharge face distributed in a shape corresponding to the cross section of the desired article, the improvement which comprises dividing the

apertures into a plurality of groups by at least one zone void of apertures so that the apertures belonging to the same group are restricted within a narrow band area having a thickness of less than 20 mm, the zone void of apertures being of a thickness more than twice the average distance between two adjacent apertures belonging to the same group, and said at least one zone being provided therein with a closed passage for passing a cooling medium through said zone in a direction perpendicular to said apertures to cool the zone, both ends of the zone being extended to a line connecting the outermost apertures.

4,221,622

METHOD OF OBTAINING FIBRE SUBSTRATES INTENDED FOR THE PRODUCTION OF COMPOSITE BODIES

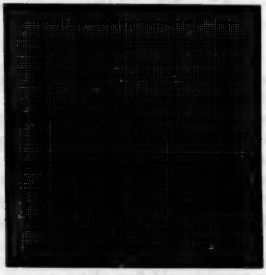
Jean-Pierre Slonina, Le Vesinet; Pierre Girard, Saint Gratien; Jacques Boucher, Argenteuil, and Joseph Gellon, Glichy, all of France, assignors to Le Carbone-Lorraine, Paris, France

Filed Jul. 24, 1978, Ser. No. 927,567

Claims priority, application France, Jul. 29, 1977, 77 23375

Int. Cl.[2] B32B *7/08, 31/16*

U.S. Cl. 156—93 **11 Claims**



1. The method of forming a fibrous substrate for use in the production of a composite body from fibrous filaments or threads which comprises the steps of:

(a) forming said filaments or threads and a binder into a coherent flat sheet;

(b) cutting perforations in said coherent flat sheet, said perforations being fine and substantially uniform in size and distribution over at least selected areas of said sheet and forming the pattern of a grid in said selected areas;

(c) subdividing said perforated sheet into a plurality of substantially identical smaller flat sheets, each carrying the pattern of at least one grid;

(d) stacking said smaller flat sheets, one upon another, to form a stack of desired height in such a manner that the perforations in one sheet overlie the perforations in the immediately underlying sheet of said stack and thus form passages through the stack; and

(e) thereafter threading through said passages in the thus formed stack strands or rods formed from fibrous filaments or threads which have been bound together with a binder.

4,221,623

METHOD OF MANUFACTURING FIBER-REINFORCED PLASTIC BODIES

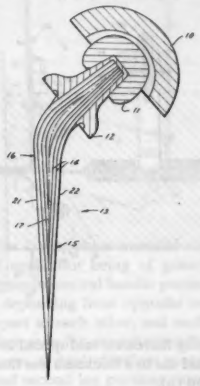
Herbert Heissler, Munich; Horst Wurtinger, Furstenfeldbruck, and Karl H. Schaab, Kaufbeuren, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,595

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753568

Int. Cl.[2] B65H *81/00;* **A61F** *1/00*

U.S. Cl. 156—169 **5 Claims**



1. A method of manufacturing a fiber-reinforced plastic body having a tapering shape, comprising the steps of:

(a) winding a ring of fibers such that different sections of the ring around its periphery correspond in contour to different longitudinal sections of the body,

(b) cutting said sections of the ring from the remainder of the ring to form a first section having an uncut side corresponding to one side of said body and a cut side tapering with respect to said uncut side of said first section, and a second section having an uncut side corresponding to the opposite side of said body and a cut side tapering with respect to said uncut side of said second section, and

(c) joining said first and second cut sections together along said cut sides to form the body of tapering shape having opposite sides formed from said uncut sides, whereby the fibers run approximately parallel to the outer contour of the finished body.

4,221,624

METHOD OF MANUFACTURING A FOAMED CORE THERMOPLASTIC SHEET

Haynes L. Eslinger, 1444 S. Tyler Rd., Wichita, Kans. 67209, and James A. Payne, Wichita, Kans.

Filed Apr. 3, 1978, Ser. No. 892,520

Int. Cl.[2] B29C *27/14;* **B29D** *27/00;* **B29F** *3/04*

U.S. Cl. 156—243 **4 Claims**

1. A method of forming a thermoplastic sheet having a sandwich construction of a foamed thermoplastic core with outer solid thermoplastic skins, the steps comprising:

(a) introducing a blowing agent into a stream of thermoplastic resin in a first plastic extruder;

(b) extruding the stream of thermoplastic resin with the blowing agent blended therein;

(c) filtering the extruded stream of step (b) and discharging the filtered stream into a feedblock;

(d) introducing a virgin extruded molten stream of thermoplastic resin into the feedblock of step (c);

(e) splitting equally in the feedblock the virgin molten stream of step (d) thereby forming a first virgin stream of

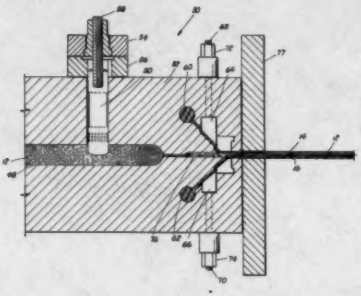
thermoplastic resin and a second virgin stream of thermoplastic resin;

(f) introducing the first virgin stream of step (e) on top of the filtered stream of step (c);

(g) introducing the second virgin stream of step (e) on the bottom of the filtered stream of step (c);

(h) discharging the combination of the first virgin stream, the second virgin stream, and the filtered stream from the feedblock into a sheet die of a defined thickness;

(i) tear drop spreading the discharged combination of step (h) while in said sheet die to a thickness greater than said defined thickness of step (h); and



(j) compressing thereafter said spread combination of step (i) while in said die to a thickness less than said defined thickness of step (h).

2. The method of claim 1 additionally including controlling the flow of said tear dropped combination by restricting control means subsequent to said tear dropping.

3. The method of claim 2 further including discharging the combination from the die and feeding the same into a roll stack and introducing an acrylic film on the top of said combination as it is fed through the roll stack and laminating it to said combination.

4,221,625

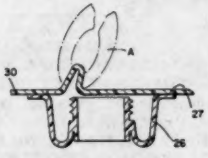
WATER MATTRESS AND METHOD OF MANUFACTURE

Richard Fraige, 1823 Alameda Ave., Alameda, Calif. 94501

Division of Ser. No. 566,858, Apr. 10, 1975, Pat. No. 3,957,557. This application Apr. 14, 1976, Ser. No. 676,834

Int. Cl.[2] B32B *31/18*

U.S. Cl. 156—251 **2 Claims**



1. A method of incorporating a heat sealable plastic valve with a radially extending flat flange for bonding to thermal plastics in a flat uperforated rectangular sheet of thermal plastic by heat sealing without the necessity of preforming an aperture in said sheet before said valve is joined with said sheet comprising:

placing a radially extending flat bonding surface of a preformed ingress-egress valve against one of the sides of a thermal plastic sheet, said surface having a central aperture therein;

applying heat to the interface of the bonding surface of said valve and a contiguous portion of the sheet in contact with said bonding surface sufficient to interbond said contiguous surfaces with one another; and

subsequently, before said contiguous surfaces cool substantially, gripping a portion of the thermal plastic sheet surrounded by such central aperture of said valve and exerting sufficient force thereon to cause said portion to separate about the inner periphery of such aperture of said valve, thereby exposing its recessed aperture.

4,221,626

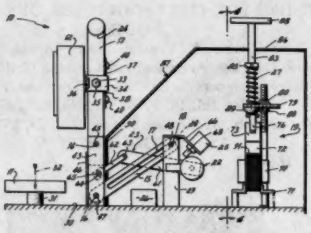
HEAT SEAL MACHINE

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Filed Aug. 14, 1978, Ser. No. 933,185

Int. Cl.[2] B30B *15/20, 15/22, 15/34*

U.S. Cl. 156—366 **25 Claims**



1. A heat seal machine operable to heat seal two workpieces together, said machine comprising

first and second platens mounted on a frame, at least one of said platens including heater means for heating said platen to a desired temperature,

a platen arm connecting said first platen to said frame, said platen arm permitting said first platen to be moved between opened and closed positions relative to said second platen,

a lever linkage connected between said platen arm and said frame for pressing said first platen against said second platen when said first platen is in said closed position, said lever linkage being structured so that a lesser hold down pressure thereon will result in a greater compression pressure of said first platen against said second platen when said first platen in a said closed position,

an electromagnet clamp mounted on said frame, said electromagnet clamp including at least one armature and at least one coil, one of said armature and coil being movable between a holddown position at which said holddown pressure is exerted on said lever linkage, and a release position to permit return of said first platen from said closed position to said opened position, and

a clamp adjustor connected with said electromagnet clamp, said adjustor being operable to adjust the holddown position of said clamp in order to compensate for different thickness workpieces that may be positioned between said platens, said clamp adjustor thereby permitting said electromagnet clamp to hold said lever linkage in said press position without substantially altering the holddown position of said armature and said coil when a change is made in the thickness of workpieces positioned between said platens.

4,221,627

DEVICE FOR CONNECTING TOGETHER STEEL CORD INSERTS FOR VEHICLE TIRES

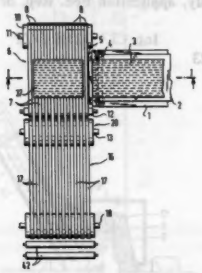
Harry Rost, Munich, Fed. Rep. of Germany, assignor to Metzeler Kautschuk AG, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 892,856, Apr. 3, 1978, abandoned, which is a continuation of Ser. No. 809,699, Jun. 24, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,734

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 2628887

Int. Cl.² G03D *15/04*; B32B *31/00*

U.S. Cl. 156—507 5 Claims



1. In a device for connecting steel cord web sections, of steel cord webs having steel threads disposed in the longitudinal direction, to form a steel cord web with steel threads disposed at an angle to the longitudinal direction of the original steel cord web, said device comprising:

a conveyor belt means having a plurality of narrow belts for feeding the steel cord web sections;

retaining means for clamping the seam portions of the steel cord web sections to be connected; and

means for bringing together and joining, at a connecting point, the connection faces of the same portions of the steel cord sections to be connected;

the improvement wherein the conveyor belt means comprises an incoming conveyor belt having an upper section extending beneath the connection point, an outgoing conveyor belt having a plurality of narrow belts spaced with respect to one another for advancing the steel cord web which is produced, the outgoing conveyor belt extending beneath the connection point;

wherein the incoming conveyor belt and the outgoing conveyor belt interlock with one another beneath the connection point; and

wherein the retaining means is positioned above the conveyor belt means, said retaining means comprising incoming and outgoing pusher belts having a plurality of narrow belts spaced with respect to one another, the incoming pusher belt and the outgoing pusher belt interlocking with one another above the connection point, said device further including drive means for driving said conveyor belt means wherein the incoming conveyor belt and the incoming pusher belt and the outgoing conveyor belt and the outgoing pusher belt are drivable in pairs, said pairs being drivable in synchronism, and the size of the gap between the conveyor belt means and the retaining means cooperating therewith is determined by the thickness of the steel cord web section or the steel cord web such that the web section and web are clamped between the conveyor belt means and the retaining means.

4,221,628

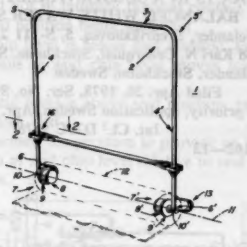
APPLICATOR FOR LAYING ROLLED SHEET MATERIAL

Arnold M. Rosenberg, Potomac, and James M. Gaidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,106

Int. Cl.² B44C *7/02*; E04D *15/06*

U.S. Cl. 156—577 7 Claims



1. An applicator for laying sheet material rolled on a core onto a surface, said applicator being of generally U-shaped configuration comprising a central handle portion and first and second leg portions depending from opposite ends of the handle portion with respect to each other, and each having a free end, means at said free ends for mounting said rolled material and core therebetween, a rigid stabilizer member positioned between said first and second leg portions, means at opposite ends of said stabilizer member to constrain motion of said stabilizer member axially along said leg portions in substantially parallel attitude with respect to said handle portion in all positions, and permitting said leg portions to be sprung apart when said stabilizer member is in closely spaced relationship to said handle portion and inwardly forcing each of said leg portions' free ends when said stabilizer member is in a predetermined closely spaced relationship to said leg portions' free ends.

4,221,629

ELECTRON BEAM EVAPORATION DEVICE FOR VACUUM EVAPORATORS

Erich Zollinger, Schaanwald, Liechtenstein, assignor to Balzers Aktiengesellchaft, Liechtenstein

Filed Nov. 17, 1978, Ser. No. 961,544

Claims priority, application Switzerland, Nov. 22, 1977, 014235/77

Int. Cl.² B01D *1/00*

U.S. Cl. 159—28 R 5 Claims

1. An electron beam evaporation device for evaporators, comprising, a supporting bar, a retainer for the material to be

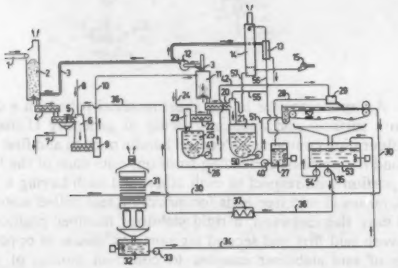
evaporated mounted on said supporting bar, an electron beam source mounted on said supporting bar and a deflecting magnet for directing the electron beam onto the material to be evaporated mounted on said supporting bar, at least two of said retainer, said deflecting magnet and said electron beam source being displaceable along said supporting bar.

4,221,630

WET METHOD OF PREPARING FIBERBOARD PRODUCTS IN A SUBSTANTIALLY CLOSED AND BALANCED WHITE WATER SYSTEM

Stig D. Selander, Fredrikshovsq. 5, S-111 22, Stockholm, Sweden, and Karl N. Cederquist, Stockholm, Sweden, assignors to Stig Selander, Stockholm, Sweden

Filed Apr. 20, 1978, Ser. No. 898,385
Claims priority, application Sweden, Apr. 25, 1977, 7704737
Int. Cl.² D21C *9/18*
U.S. Cl. 162—13 **5 Claims**



1. In the wet method of making fiberboard products from hot pressed wet sheets comprising at least one layer of surface pulp superposed on a layer of base pulp in a substantially closed and balanced white water system of predetermined volume, in which pulp is produced by treating moisture-containing chips of lignocellulosic material in a defibrator under generation of steam of predetermined superatmospheric pressure and correspondingly elevated temperature, the steam-entrained pulp being passed to a cyclone where the steam is separated from the pulp and utilized to presteam the chips to a predetermined temperature and moisture content, the pulp thus produced being suspended in white water to form a base layer pulp suspension which is transported to the base layer forming machine, where the white water is drained off from the suspension and recycled as dilution water to the base layer suspension stage, the improvement in said method for maintaining the volume of white water constant, comprising:

(a) dewatering the chips to a dry content of over 45% prior to being presteamed;

(b) presteaming the chips

(c) further dewatering the presteamed chips and then defibrating them in the defibrator so that the consistency of the pulp entering the cyclone is in the range of 55%–70%;

(d) preparing a surface layer pulp suspension having a consistency of 10%–25%;

(e) transporting said surface layer suspension to a surface layer forming machine;

(f) withdrawing white water from said surface layer suspension to form a surface layer wet sheet and recycling said white water to the surface layer suspension stage to prepare a new surface layer suspension;

(g) applying said surface layer wet sheet to the base layer wet sheet at the base layer forming machine and simultaneously dewatering said surface layer and said base layer to form a layered sheet having a consistency of about 55% prior to hot pressing, wherein the white water from the dewatering of the base layer and surface layer on the baselayer forming machine is collected;

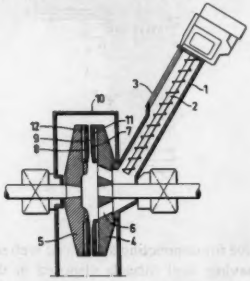
(h) operating the defibrator at an energy input to generate sufficient steam from the defibration of the chips to supply the steam demand for the presteaming of the chips as well as the steam necessary for use as heat to evaporate a sufficient portion of the white water collected in step (g) to maintain a constant white water level.

4,221,631

METHOD AND APPARATUS FOR REFINING FIBEROUS MATERIAL

Gustaf R. Hellerqvist, deceased, late of Sundsvall, Sweden, and Ingeborg H. C. Hellerqvist, legal representative, Stockholm, Sweden, assignors to SCA Development Aktiebolag, Sweden

Filed Aug. 16, 1978, Ser. No. 933,999
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 7710948
Int. Cl.² D21B *1/12*
U.S. Cl. 162—23 **16 Claims**



1. A method of refining fiberous material in a disc refiner, the disc refiner having a pair of refining discs each of which includes an inner refining surface, and the refining discs being mounted for rotation relative to one another within a housing with said inner refining surfaces of said refining discs opposing one another during said relative rotation and defining a refining space therebetween, the method comprising:

feeding fiberous material between said refining discs;

relatively rotating said refining discs so that said fiberous material passes radially outward through said refining space between said refining surfaces of said refining discs into said housing;

withdrawing at least a portion of the steam developed in said refining space from said refining space through a passageway provided in at least one of said refining surfaces of said refining discs, said passageway extending from said refining surface in a direction away from said refining space and communicating with said housing; and

passing said withdrawn steam directly into said housing without passing it through said refining space.

7. A disc refiner for refining fiberous material, said disc refiner comprising:

a housing;

first and second refining discs each of which includes an inner refining surface, said refining discs being mounted for rotation relative to one another within said housing with said inner refining surfaces of said first and second refining discs opposing one another to define a refining space therebetween; and

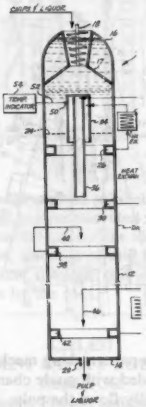
conducting means for said first refining disc extending from said refining space and communicating with said housing for removing at least a portion of the steam developed in said refining space and conducting it directly into said housing without passing it through said refining space.

4,221,632

METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF THE CHIP LEVEL IN A PULPING DIGESTER

Alton L. Loe, Jr., Tacoma, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 735,437, Oct. 26, 1976, abandoned.
This application Apr. 3, 1979, Ser. No. 26,534
Int. Cl.[2] D21C *7/10, 7/12, 7/14*
U.S. Cl. 162—49 **8 Claims**



5. In an apparatus for delignifying wood chips to form wood pulp, said apparatus containing during operation a digesting medium and wood chips, the chip level in said apparatus being variable and being below the level of said digesting medium, said apparatus including inner and outer, concentrically arranged, digesting medium recirculating pipes positioned in said apparatus, said pipes having outlets at spaced heights in said apparatus, said outer pipe having its outlet located below the location of said chip level and above the outlet of the inner pipe, and first and second means respectively associated with said inner and outer pipes, said first and second means each comprising means for withdrawing digesting medium from below the respective outlets of said pipes, means for heating said digesting medium and means for returning said digesting medium to respective ones of said recirculation pipes, an improvement for determining the location of said chip level relative to a predetermined position in said apparatus, comprising

temperature sensing means located in the apparatus in close proximity to but not in intimate thermal contact with said outer pipe for sensing the temperature of said digesting medium at said predetermined position in said apparatus, said predetermined position being such that when said chip level is below said predetermined position, said sensed temperature falls as said chip level moves toward said predetermined position, and when said chip level is above said predetermined position, said sensed temperature rises, and

indicating means responsive to said temperature sensing means for providing an output signal representative of the location of said chip level relative to said predetermined position.

7. In a method for delignifying wood chips including the steps of

feeding said chips into a digesting zone, said digesting zone containing a liquid digesting medium, the level of said chips in said digesting zone being lower than the level of said medium,

removing a portion of the medium from said digesting zone, heating said medium and recirculating said medium into said digesting zone through inner and outer pipes each having an outlet in the upper portion of said digesting zone below the level of said chips, said chips and said medium in said digesting zone thereby being heated to produce pulp from said chips, and

withdrawing pulp from said digesting zone,

an improved method for determining the level of said chips in said digesting zone relative to a predetermined position in said digesting zone, comprising the steps of:

sensing the temperature of the medium at a predetermined position in said digesting zone, said predetermined position being in close proximity to the exterior portion of said outer pipe and not in intimate thermal contact with said outer pipe, said position being such that

(a) when said chip level is below said position, said sensed temperature falls as said chip level moves toward said position, and

(b) when said chip level is above said position, said sensed temperature rises, and

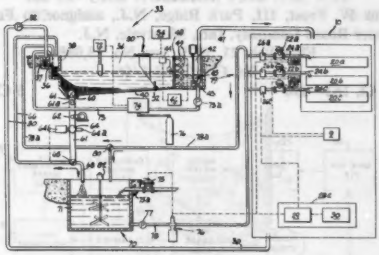
displaying said sensed temperature to provide an indication of the location of said chip level relative to said predetermined position.

4,221,633

METHOD AND APPARATUS FOR CONTROLLABLY RECYCLING THE SOLIDS CONTENT OF THE EFFLUENT FROM AN ASBESTOS-CEMENT PRODUCTS FORMING PLANT

Juris Laipenieks, Englewood, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 4, 1978, Ser. No. 893,218
Int. Cl.[2] D21H *3/66*
U.S. Cl. 162—154 **21 Claims**



1. A system for recycling, to at least one asbestos-cement product making machine, a slurry containing asbestos-cement solids derived from the effluents generated by at least one asbestos-cement product making machine in a production plant, said effluents being generated during normal operation as well as during shut-down and clean-off of said at least one machine, said system comprising:

(a) an effluent settling tank for containing said effluents operatively connected to said at least one machine;

(b) a means for returning clear water from said settling tank to said production plant;

(c) a slurry tank;

(d) means, operatively connected to said settling tank and said slurry tank, for selectively providing to said slurry tank asbestos-cement slurry from said settling tank, said slurry having a concentration of asbestos-cement solids above a predetermined concentration;

(e) means associated with said slurry tank for maintaining a concentration of said solids in said slurry tank at an amount equal to or less than said predetermined concetration; and

(f) means for selectively providing to said at least one machine a controlled flow of slurry from said slurry tank.

13. A method for recycling to at least one asbestos-cement product making machine an aqueous slurry containing asbestos-cement solids derived from the effluents generated by at

least one asbestos-cement product making machine in a production plant, said effluents being generated during normal operation as well as during shut-down and clean-off of said at least one machine, comprising the steps of:

(a) transporting said effluents to a first collection point where asbestos-cement solids are permitted to concentrate by a process of precipitation and settling out of said solids from said effluents;

(b) removing said solids in slurry form from said first collection point;

(c) measuring the concentration of said solids in said slurry removed in step (b);

(d) transporting said slurry to a second collection point when said concentration measured in (c) is greater than a predetermined value; and

(e) providing at least one asbestos-cement product making machine with at least a portion of said slurry transported to said collection point in step (d).

4,221,634

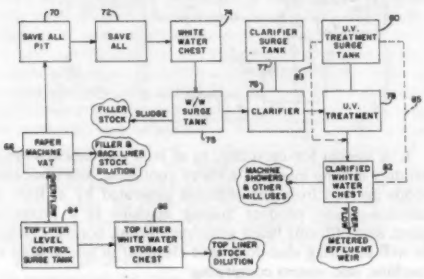
METHOD OF TREATING PAPERMAKING WHITE WATER

Arthur W. Frost, III, Park Ridge, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Feb. 21, 1979, Ser. No. 13,088

Int. Cl.[2] D21F *1/66*

U.S. Cl. 162—190 **5 Claims**



1. An improved method of papermaking, said method comprising dispersing papermaking fibers in a slurry, depositing said fibers from said slurry on a papermaking apparatus which includes fiber laying means and a white water recovery system, recovering the white water from said papermaking machine and elsewhere in the papermaking process, clarifying said white water after recovery thereof from said papermaking apparatus, and thereafter at least intermittently exposing said clarified white water to ultraviolet light of sufficient wavelength and quantity to initiate polymerization of dissolved solid materials contained in said papermaking white water into more complex, less soluble molecular structure, permitting said polymerization to continue until said substantial portions of said dissolved solid materials become insoluble, and periodically removing said insolubilized materials from said clarified white water while recirculating said white water within said papermaking apparatus.

4,221,635

PULP FEED FOR A PAPERMAKING MACHINE

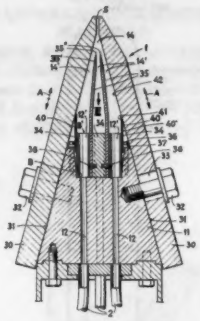
Rüdiger Kurtz, Immenstaad, and Wolfgang Trudel, Bad Waldsee both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 964,135

Claims priority, application Switzerland, Dec. 13, 1977, 15282/77

Int. Cl.[2] D21F *1/02*

U.S. Cl. 162—343 **9 Claims**



1. A pulp feed for a papermaking machine, comprising:

a guide block provided with guide channels through which essentially parallelly flows the pulp;

means defining a nozzle channel which merges and flow communicates with the guide block;

said nozzle channel terminating at an outlet gap for the efflux of the pulp;

said means defining said nozzle channel including two lip plates;

means for displaceably mounting said lip plates in a direction towards and away from said outlet gap in order to adjust the size of said outlet gap, while maintaining essentially a constant angle of said lip plates relative to one another and in relation to said guide block;

at least one rigid partition wall;

means for fixedly securing said at least one rigid partition wall at said guide block so as to extend in the direction of flow of the pulp, said means for fixedly securing comprising at least one pin which extends through the partition wall and is connected to said guide block;

said partition wall dividing the nozzle channel along substantially its entire length into partial cross-sectional regions;

and the relationship of the cross-sections of said cross-sectional regions, in a direction essentially perpendicular to the direction of flow of the pulp, being essentially constant.

4,221,636

GRIDS FOR BRINGING ABOUT THE SPACING OF A GROUP OF SHEATHED FUEL RODS IN A NUCLEAR REACTOR

Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 21, 1978, Ser. No. 917,593

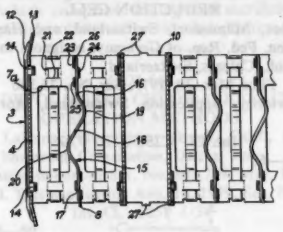
Claims priority, application France, Jul. 7, 1977, 77 20908

Int. Cl.[2] G21C *3/02*

U.S. Cl. 176—76 **11 Claims**

1. A spacing grid for a group of fuel rods in a nuclear reactor assembly which comprises an assembly of two groups of thin sheets which are parallel within each group and perpendicular from one group to the next for defining cavities of square cross-section, each of which is traversed by a fuel rod, whilst substantially in the center of its extension in the region defining

two adjacent cavities on either side of a sheet the latter has at least one elastically sprung tongue connected to the sheet and made from a material which differs from that of the sheet, each tongue being bent so as to give a zig-zag profile so that it has at least two bosses bearing respectively against the rods passing through the two cavities, wherein the ends of the tongue are



disposed in a plane adjacent and parallel with the plane of the sheet and are engaged in slots provided in the latter, said slots being adapted to guide the ends of the tongue according to the length of said tongue, the ends of said tongue being free and adapted to freely slide through said slots when forces are applied to the bosses by the rods.

4,221,637

LIQUID ABSORBENT SAFETY ROD FOR A NUCLEAR REACTOR

Claude Malaval, Antony, France, assignor to Groupement Atomique Alsacienne Atlantique, Le Plessis Robinson, France

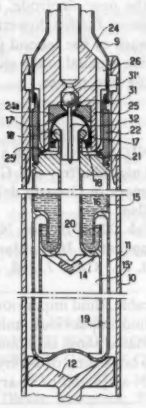
Continuation of Ser. No. 636,495, Dec. 1, 1975, abandoned, which is a continuation of Ser. No. 367,023, Jun. 4, 1973, abandoned. This application Jun. 29, 1976, Ser. No. 700,928

Claims priority, application France, Jun. 2, 1972, 72.19987

The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.

Int. Cl.[2] G21C *7/16*

U.S. Cl. 176—86 L **10 Claims**



1. In combination, an insertable safety control and shut down assembly and a fast nuclear power reactor, said reactor having a reactor core, a cover overlying said reactor core, aligned vertical cylindrical openings within said cover and said core, said assembly comprising:

a cylindrical casing having the size of a fuel cell and mounted within a reactor core cylindrical opening,

a cylindrical body within an aligned cylindrical opening of said cover,

a hollow rod surmounting said cylindrical casing and bearing at its upper portion a piston slidably mounted within said cylindrical body,

said cylindrical body being closed off at its upper end by valve means,

said cylindrical casing comprising a reservoir divided into fluid communicating upper and lower superposed compartments with the upper compartment above the core and the lower compartment within the core,

liquid abosrbent within said reservoir and movable by gravity into said lower compartment,

means including said valve means, said piston and said slidable hollow rod for supplying gas under pressure to said lower compartment to force the liquid absorbent to move into the upper compartment, said means including an axial pipe extending from said lower compartment through said upper compartment, and a junction element borne at the upper end of said pipe and engagable with the slidable hollow rod when the hollow rod is lowered by gas pressure applied to the piston when said valve means is open to seal off fluid communication by way of said junction element between said axial pipe and the exterior of said slidable hollow rod.

4,221,638

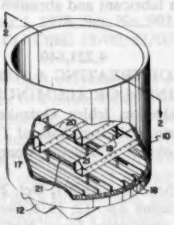
FLUID-SOLID CONTACT VESSEL HAVING FLUID DISTRIBUTORS THEREIN

John B. Jones, Jr., Rifle, Colo., assignor to Paraho Corporation, Grand Junction, Colo.

Filed Jan. 5, 1976, Ser. No. 646,573

Int. Cl.[2] C10B *1/04, 47/20;* F27B *1/08, 1/22*

U.S. Cl. 202—121 **6 Claims**



1. Fluid distribution means for large generally circular vessels having large uninhibited volumes normally filled with particulate matter, comprising:

(a) hollow passage means rigidly mounted and extending from one side to the opposite of a vessel;

(b) said hollow passage means being defined by a beam having a cross-section at least similar in shape to an H having a vertical web and adequate strength to carry a load imposed on it, and being further defined by vertical, planar sidewalls secured to the open sides of said beam, said sidewalls having a series of spaced fluid distribution orifices therethrough;

(c) peaked cover means extending over the top of the hollow passage means and providing an overhanging lip over each generally vertical sidewall preventing direct impingement of particulate matter on a major portion of each sidewall;

(d) means for rigidly mounting said hollow passage means within a vessel comprising a series, of vertical supports secured at intervals to the outside and at the bottom of said hollow passage means for preventing movement of said hollow passage means; and

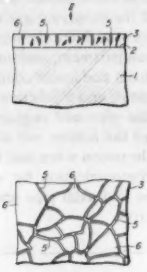
(e) reinforcing means in said hollow passage means for supporting said generally vertical sidewalls.

4,221,639

ALUMINIUM ALLOY CYLINDER AND MANUFACTURING METHOD THEREOF

Chikato Ninagawa, Tokyo; Tadashi Ozaki; Minoru Yonekawa, both of Yokosuka, and Hitoshi Harada, Yokohama, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,570
Claims priority, application Japan, Oct. 9, 1978, 53-124325
Int. Cl.[2] C25D *3/20, 5/50, 7/04;* F02F *1/20*
U.S. Cl. 204—26 16 Claims



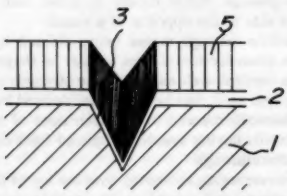
1. An aluminium alloy cylinder comprising a cylinder body, a cylinder bore in said body, a hard iron layer electrodeposited on the wall surface of said cylinder bore, and a multiplicity of randomly oriented channels formed in said hard iron layer, said channels being developed in said hard iron layer during the electrodeposition of said hard iron layer on the wall surface of said cylinder bore by means of a high cathode current density with each of said channels having an opening width sufficient to receive therein lubricant and abrasive dust.

4,221,640

METHOD OF TREATING A SURFACE OF AN ALUMINUM OR ALUMINUM ALLOY

Kizo Shibata, Takaoka; Ichiro Ootsuka, Toyama; Shyoichi Anada, and Kunio Wakasugi, both of Takaoka, all of Japan, assignors to Hokusei Aluminum Company Ltd., Takaoka, Japan

Continuation of Ser. No. 737,007, Oct. 29, 1976, abandoned.
This application Apr. 12, 1978, Ser. No. 895,725
Claims priority, application Japan, Nov. 13, 1975, 50/136485; Mar. 12, 1976, 51/27556
Int. Cl.[2] C25D *11/06, 11/08, 11/10, 11/22*
U.S. Cl. 204—33 6 Claims



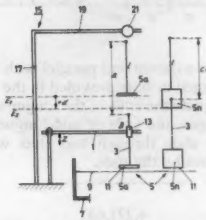
1. A method of treating a surface of an aluminum or aluminum alloy, characterized in that the aluminum or aluminum alloy is electrolyzed in an electrolytic bath having a specific conductance of 1 to 100 $m\Omega^{-1}/cm$ and comprising an aqueous solution containing at least one of the group consisting of alkali metal hydroxides, alkaline-earth metal hydroxides, alkali metal salts and alkaline-earth metal salts, the concentration of each of said hydroxide or said salt of alkali or alkaline earth metal being 0.01 to 0.5 mol/l, at a bath temperature of 10 to 50° C. by using an inert material as an opposite electrode and applying an alternating current of 10 to 80 volts to form a layer having a grain-like pattern on the surface of the aluminum or aluminum alloy.

4,221,641

METHOD OF CHANGING ELECTRODES IN A REDUCTION CELL

Rudolf Weber, Männedorf, Switzerland, and Hans Schaper, Rheinfelden, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 30, 1979, Ser. No. 25,380
Claims priority, application Switzerland, Apr. 3, 1978, 3527/78
Int. Cl.[3] C25C *3/20, 7/06*
U.S. Cl. 204—67 24 Claims



1. A method of measuring electrodes to be exchanged in electrolysis cells, after using up of an electrode surface directed towards an opposed electrode, comprising the steps of withdrawing an old electrode to be exchanged, recording the transit of a first plane above the cell by the old electrode surface directed towards the opposed electrode so as to measure the length of the old electrode, storing the withdrawal distance travelled through by the old electrode up to this transit, lowering a new electrode, detecting the transit of a second plane above the cell parallel to the first plane by a new electrode surface directed towards the opposed electrode so as to measure the length of the new electrode, measuring the spacing between the two planes further lowering the new electrode starting from the transit of the second plane, through a travel towards the cell which is equal to the stored withdrawal travel less the spacing of the two planes.

4,221,642

ANIONIC MEMBRANES

Oronzio De Nora; Luigi Giuffre, and Giovanni Modica, all of Milan, Italy, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Feb. 22, 1979, Ser. No. 13,828
Claims priority, application Italy, Mar. 1, 1978, 20792 A/78
Int. Cl.[2] C25B *13/08, 1/34*
U.S. Cl. 204—98 12 Claims

1. An anion permeable, fluid impervious membrane comprising thin bodies of fluid impervious, anion permeable copolymers of (1) a halogenated vinyl monomer and (2) at least one member of the group consisting of 2-vinylpyridine and 4-vinylpyridine optionally N-alkylated or N-arylated.

4,221,643

PROCESS FOR THE PREPARATION OF LOW HYDROGEN OVERVOLTAGE CATHODES

Ronald C. Miles, and Larry D. Carpenter, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 2, 1979, Ser. No. 63,016
Int. Cl.[2] C25B *1/16, 1/26, 11/02, 11/03*
U.S. Cl. 204—98 14 Claims

1. In a process for preparing an electrode having reduced cathodic hydrogen overvoltage potential in an electrolytic

cell, wherein both a low overvoltage metal and a sacrificial metal are electrodeposited onto an electrically conductive substrate by insertion of said electrically conductive substrate into an electroplating solution along with a plating anode, and an electric current is passed from said plating anode to said electrically conductive substrate and the sacrificial metal is removed by leaching with alkali metal hydroxide, the improvement which comprises adding said sacrificial metal to said electroplating solution after electrodeposition is initiated.

4,221,644

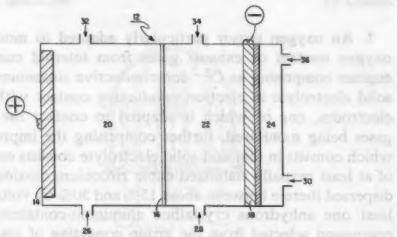
AIR-DEPOLARIZED CHLOR-ALKALI CELL OPERATION METHODS

Ronald L. LaBarre, Huntington Beach, Calif., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 885,754, Mar. 13, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,422

Int. Cl.[2] C25F *1/34*

U.S. Cl. 204—98 **2 Claims**



1. A method for operating a chlor-alkali electrolytic cell having an anode compartment, a cathode compartment divided from the anode compartment by a separator and an oxygen compartment divided from the cathode compartment by an oxygen electrode comprising the steps of: feeding an alkali metal halide solution to the interior or the anode compartment; feeding an aqueous solution to the interior of the cathode compartment; removing substantially all carbon dioxide from air, thereafter saturating said air with water at a temperature in the range of 40°–70° C. and feeding said air at a higher temperature in the range of 40°–90° C. to the interior of the oxygen compartment at a positive gauge pressure in the range of 0.25 to 250 grams per square centimeter (0.1 to 100 inches of H_2O); providing a total flow rate in the range of 1.5 to 5 times the theoretical stoichiometric amount of oxygen necessary for the reaction; applying an electrical potential between the cathode and anode of the electrolytic cell; removing halogen gas from the anode compartment; removing alkali metal hydroxide from the cathode compartment; and removing an oxygen depleted air from the oxygen compartment while maintaining the positive gauge pressure upon the interior of the oxygen compartment.

4,221,645

POLYCARBONATES WITH END GROUPS CONTAINING DOUBLE BONDS WHICH CAN BE CROSSLINKED BY UV LIGHT

Siegfried Adelmann; Dieter Margotte; Hans J. Rosenkranz; Hugo Vernaleken; Werner Nouvertné, and Dieter Freitag, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

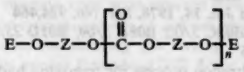
Filed Jun. 21, 1979, Ser. No. 50,899

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829256

Int. Cl.[2] C08F *8/00*

U.S. Cl. 204—159.14 **14 Claims**

1. High-molecular weight aromatic polycarbonates having molecular weights $\overline{M}_w$ (weight average) between about 10,000 and 200,000 which are based on diphenols and monofunctional chain stoppers, characterized in that they correspond to the formula (I)



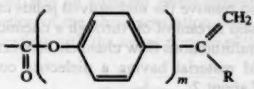
(I)

in which

Z denotes the radical of a diphenol,

n denotes an integer from about 20 to 400,

E denotes



wherein

m denotes 0 or 1 and

R denotes H or C_1-C_3-alkyl,

and in which between about 0.5 and 5 mol % of Z are radicals of aromatic dihydroxyketones.

9. A process for the modification of a polycarbonate as claimed in claim 1, characterized in that the polycarbonate is irradiated with UV light.

4,221,646

TREATED POLYETHERURETHANE PHOTOPOLYMER COMPOSITION CONTAINING TRIARYL PHOSPHINE

Anthony F. Finelli, Akron, and Michael E. Kimball, Norton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 1, 1978, Ser. No. 902,011

Int. Cl.[2] C08G *18/00, 63/00*

U.S. Cl. 204—159.19 **6 Claims**

1. In an ultra violet light polymerizable polyetherurethane composition composed of a dilute alkaline solution dispersible liquid ethylenically unsaturated polyetherurethane and 0.5 to 5.0 parts of a photoinitiator, the improvement comprising adding 0.01 to 0.5 parts of triaryl phosphine to the composition, said composition characterized to yield a printing plate having microdots having a slope which, under magnification, has an appearence essentially of a pyramid.

4,221,647

ANODIC ELECTROCOATING COMPOSITIONS

Edward T. Turpin, Elyria, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,802

Int. Cl.[2] C25D *13/06*

U.S. Cl. 204—181 R **1 Claim**

1. An anodic aqueous electrocoating process for electrocoating a paint film onto an electrically conductive metal anode substrate, the improvement providing a binder polymer composition comprising on a weight basis on a step-wise basis:

(a) providing 20% to 40% of a styrene-allyl alcohol copolymer containing unreacted hydroxyl groups;

(b) esterifying 20% to 50% of a fatty acid with a portion of the hydroxyl groups on copolymer (a);

(c) esterifying 0% to 3% of α,β-unsaturated dicarboxylic acid or anhydride with a portion of the hydroxyl groups on copolymer (a); and

(d) coreacting 20% to 50% of an acid-functional acrylic copolymer by addition polymerization with the fatty acid (b) and the dicarboxylic acid or anhydride (c), and neutralizing said acid-functional groups and dispersing said binder polymer composition in water to provide an aqueous anodic electrocoating composition.

4,221,648

MEDIA REGENERATION IN ELECTROFILTRATION

Robert B. Martin, Spring, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 14, 1978, Ser. No. 924,464
Int. Cl.[2] B03C 5/00; B08B 3/04; B01D 23/24
U.S. Cl. 204—186 19 Claims

1. An electrofiltration process for removing hydrogenation catalyst and other undissolved solids from a stream of edible oil which has been subjected to catalytic hydrogenation, said process comprising:

a. providing the stream of so hydrogenated edible oil at a sufficient temperature that organic solids such as stearine are in solution and cannot plug an electrofilter bed adapted to remove the undissolved solids carried therein;

b. passing said stream of oil through a chemically inert bed having multitudinous flow channels between rigid masses of a solid material having a dielectric constant not in excess of about 7;

c. establishing a d.c. electrical field within said bed having an intensity sufficient for removing the undissolved solids from said stream of oil by electrically induced adhesion of the solids in said bed material;

d. removing the purified oil stream with reduced undissolved solids content from said bed; and

e. cleaning at selected intervals at least a portion of said material of adhering solids by interruption of said electrical field, passing a cleaning fluid to remove adhering solids from said material and removing the fluid with the removed solids from said material;

which is further characterized by

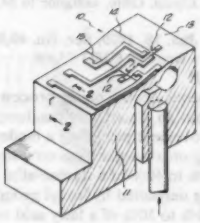
f. periodically washing said material with an acid so as to regenerate its activity.

4,221,649

THIN FILM STRAIN GAGE AND PROCESS THEREFOR

Thomas C. Tisone, Thousand Oaks, and Barry F. T. Bolker, Oxnard, both of Calif., assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 937,413, Aug. 28, 1978. This application Apr. 9, 1979, Ser. No. 28,150
Int. Cl.[2] C23C 15/00
U.S. Cl. 204—192 D 5 Claims



1. A process for sputtering deposition of compressively stressed dielectric films in a thin film strain gage including a plurality of electrical resistances, comprising:

depositing a film of dielectric material at a rate of approximately 30 to 100 Å per minute on a substrate in which the substrate material temperature is under 300° C. while maintaining the substrate negatively biased; and

depositing the electrical resistances on said dielectric film.

4,221,650

SOLID ELECTROLYTE OXYGEN SENSORS

Karl-Hermann Friese; Friedrich J. Esper, both of Leonberg, and Heinz Geier, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,385
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810134
Int. Cl.[2] G01N 27/58
U.S. Cl. 204—195 S 11 Claims

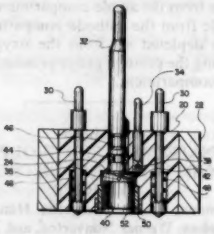
1. An oxygen sensor particularly adapted to monitor the oxygen content of exhaust gases from internal combustion engines comprising an O^{2-}-ion conductive zirconium dioxide solid electrolyte in electron conductive contact with spaced electrodes, one of which is adapted to contact the exhaust gases being monitored, further comprising the improvement which consists in that said solid electrolyte consists essentially of at least partially stabilized cubic zirconium dioxide having dispersed therein between about 15% and 50% by volume of at least one anhydrous crystalline aluminum-containing oxide compound selected from the group consisting of magnesium spinel, mullite and alumina and having a specific surface of more than 1 m^2/g, said solid electrolyte having an electrical resistivity not exceeding 10^7 Ωcm at a temperature of 600° C., substantially all of the material other than said aluminum-containing oxide compound consisting of said stabilized zirconium dioxide.

4,221,651

ELECTROCHEMICAL CELL FOR MEASURING HYDROGEN IN METAL

Florian B. Mansfeld, Westlake Village, Calif., and David K. Roe, Portland, Oreg., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 25, 1979, Ser. No. 51,771
Int. Cl.[3] G01N 27/46
U.S. Cl. 204—195 C 5 Claims



1. An electrochemical cell for measuring hydrogen in metal, comprising:

a body having a cavity with an open side;

a vent extending from said cavity through said body to vent said cavity;

a sponge in said cavity extending adjacent to said open side;

a jell of electrolyte on said sponge adjacent said open side;

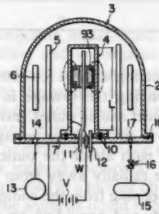
seal means encompassing at least the portion of said cavity

containing said sponge adjacent said open side, said seal means enclosing a predetermined area;
an anode in said cavity for maintaining an oxidizing potential adjacent said open side;
a contact electrode for making electrical contact with the metal when the cell is placed against the metal;
means for measuring hydrogen oxidation current between said anode and said contact electrode;
a reference electrode extending into said cavity; and
means for measuring voltage between said reference electrode and said anode.

4,221,652
SPUTTERING DEVICE

Noboru Kuriyama, Kawasaki, Japan, assignor to Kabushiki Kaisha Tokuda Seisakusho, Kawasaki, Japan

Filed Apr. 6, 1976, Ser. No. 674,220
Claims priority, application Japan, Apr. 10, 1975, 50/43520
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—298 **16 Claims**



1. A sputtering device adapted to form a metallic film on a surface of a workpiece, said device comprising a container having a plurality of anodes circumferentially surrounding a cathode, said anodes and said cathode adapted to form an electric field thereinbetween, and a permanent magnet disposed within said cathode such that when said device is activated the magnetic field of said magnet is orthogonal to said electric field, and magnetic force lines from said magnet form closed loops on said cathode.

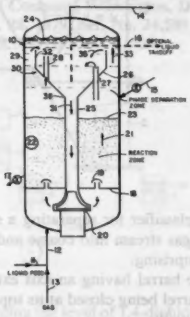
16. In a cathode sputtering apparatus comprising:
(a) cathode means adapted to support a sputtering target having a face of material to be sputtered;
(b) magnetic field means adjacent said cathode means on the side thereof opposite from said face, said magnetic field means adapted to develop magnetic lines of force, at least some of which define arcuate paths which enter and leave said face at spaced-apart intersection therewith, said lines of force tending to generate non-uniform erosion of said sputtered face;
(c) the improvement comprising means for generating substantially continuous relative motion between said face and said magnetic field means to ensure substantially uniform removal of sputtered material over at least a portion of said face.

4,221,653
CATALYTIC HYDROGENATION PROCESS AND APPARATUS WITH IMPROVED VAPOR LIQUID SEPARATION

Michael C. Chervenak, Pennington, and Alfred G. Comolli, Trenton, both of N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jun. 30, 1978, Ser. No. 920,825
Int. Cl.[2] C10G *1/00, 1/08*
U.S. Cl. 208—8 LE **15 Claims**

1. A continuous liquid phase reaction process for chemically treating fluent feedstocks, wherein the material is contacted with a reactive gas under conditions of elevated temperature and pressure in the presence of contact particles in a vertical reaction zone, which comprises:
(a) introducing the gas and feedstock into the lower portion of the reaction zone at an upward flow rate sufficient to produce random motion of contact particles in the reaction zone, the entering gas having a superficial linear velocity greater than about 0.02 ft/sec. (0.65 cm/sec.);
(b) maintaining the contact particles in the reaction zone in a volumetric expansion about 10–200% greater than in a settled condition, while chemically reacting the feedstock material with the gas;
(c) flowing the treated feedstock material and gas upwardly from the reaction zone without substantial contact particle entrainment into an adjacent phase-separation zone, the upper portion of the phase separation zone being in fluid communication with the lower portion of the phase separation zone through fluid conduit means, comprising a plurality of conduits, a portion of which are operatively disposed in the phase-separation zone such that the lower inlet and upper outlet ends are each respectively at a higher elevation than the corresponding inlet and outlet ends of the remaining conduits to selectively receive treated liquid and gas in constricted flow;



(d) maintaining the liquid level in the phase-separation zone above the outlet ends of the fluid conduit means;
(e) recycling to the reaction zone a portion of the treated material by withdrawing recycle liquid from the phase-separation zone downwardly through a downwardly directed fluid conduit means, having an enlarged upper end; and
(f) withdrawing a portion of the treated hydrocarbon material from the phase-separation zone.

4,221,654
HYDROPROCESSING COAL LIQUIDS

Thomas R. Stein, Cherry Hill; Roland H. Heck, West Deptford, and Albert V. Cabal, Woodbury, all of N.J., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jun. 7, 1978, Ser. No. 913,477
Claims priority, application United Kingdom, Jun. 26, 1977, 31307/77
Int. Cl.[2] C10G *1/04;* C10L *1/04*
U.S. Cl. 208—15 **2 Claims**

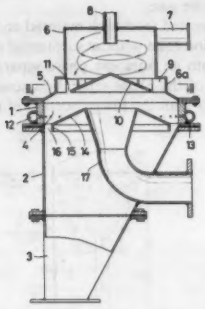
1. A liquid fuel comprising a mixture of a petroleum fraction and a liquid derived from coal which is a blend of solvent refined coal boiling above about 650° F. and recycle solvent, the said blend having been reacted with hydrogen in the presence of hydrotreating catalyst at a severity to provide hydroprocessed blend of recycle solvent and solvent refined coal having a hydrogen content of 7.5 to 10 weight percent hydrogen.

4,221,655

AIR CLASSIFIER

Niro Nakayama, Nara, and Kazuhiro Yonezawa, Habikino, both of Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,613
Claims priority, application Japan, Mar. 3, 1978, 53-28958[U]; Jul. 6, 1978, 53-94866[U]
Int. Cl.² B04C 5/08
U.S. Cl. 209—211 7 Claims



1. An air classifier for separating a stream of particles suspended in a gas stream into coarse and fine particles, said air classifier comprising:

(a) a guide barrel having an axis extending vertically, said guide barrel being closed at its top and having a cylindrical side wall;

(b) an exhaust pipe attached to and vertically extending along said axis of and through said closed top of said guide barrel for exhausting fine particles;

(c) feed pipe means attached to said cylindrical side wall of said barrel at a tangent for feeding particles in a gas stream into said guide barrel and causing said particles to move in a vortex within said guide barrel;

(d) a classifying chamber having a cylindrical side wall and coaxial with said guide barrel below said guide barrel, said classifying chamber having a plurality of regularly spaced small openings on said cylindrical side wall;

(e) a conical guide plate having an upwardly directed vertex, said conical guide plate positioned between said classifying chamber and said guide barrel and coaxial with said guide barrel, the outside diameter of said guide plate being smaller than the inside diameters of said guide barrel and classifying chamber and defining a ring shaped supply opening between the lower edge of said guide barrel and the circular edge of said conical guide plate;

(f) a ring-shaped high-pressure air chamber attached to said classifying chamber around the periphery of said classifying chamber, said air chamber having a plurality of small openings which are coextensive with said classifying chamber openings for injecting high pressure air into said classifying chamber for causing said stream of particles to separate into coarse and fine particles as said stream of particles drop through said classifying chamber by causing said particles to accelerate while moving in said vortex;

(g) a truncated cone having an upwardly directed truncated portion, said truncated cone located at the bottom of said classifying chamber and having the lower edge spaced from said classifying chamber for defining a ring shaped discharge opening for discharging coarse particles; and

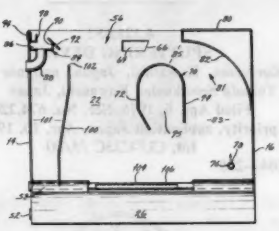
(h) a discharge pipe connected to said truncated cone-shaped classifying plate, extending down through said classifying plate for discharging fine particles.

4,221,656

METHOD OF EXTRACTING SLUDGE FROM SEWAGE

Sterling R. Kennedy, 3460 Hollenberg Dr., Bridgeton, Mo. 63044

Continuation of Ser. No. 542,165, Jan. 20, 1975, abandoned, which is a division of Ser. No. 435,262, Jan. 21, 1974, Pat. No. 3,878,101, which is a division of Ser. No. 222,229, Jan. 31, 1972, Pat. No. 3,809,245. This application Oct. 23, 1975, Ser. No. 625,208
Int. Cl.² C02C 1/02
U.S. Cl. 210—805 9 Claims



1. A method for treating sewage for extracting sludge therefrom comprising bringing the sewage in liquid form into a container having an inlet and an outlet, introducing a stream of gas into said sewage to circulate the sewage liquid in a generally circular endless path about the outlet opening to move sludge in the sewage radially away from the outlet opening, shielding the outlet opening from the endless path followed by the circulating liquid, and providing an entry to the outlet opening such that a portion of the circulating liquid substantially free of sludge passes into the outlet opening along a channel-like path remote from the periphery of the circulating sewage to remove water from the container.

4,221,657

BIOLOGICAL FERMENTATION SUBSTRATES

Yves Lebesgue, Colombes, France, assignor to Omnium d'Assainissement, Paris and Argiles et Mineraux, Montguyon, both of, France

Division of Ser. No. 764,556, Feb. 1, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,482
Claims priority, application France, Feb. 10, 1976, 76 03573
Int. Cl.² C02C 1/04
U.S. Cl. 210—616 6 Claims

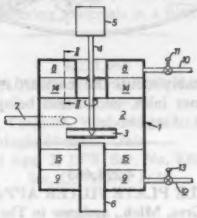
1. In the process for the biological treatment of waste water comprising passing waste water over a substrate supporting microorganisms capable of digesting pollutants, the improvement wherein said substrate comprises a homogeneous composition in the form of porous granulates with a mean particle size of 2 to 25 mm formed of a fired clay base having small quantities of added trace elements therein in quantities sufficient to support growth of the microorganisms to be retained thereon, wherein said added trace elements comprise the following essential metals, present in the following quantities, expressed in grams per kg of clay:

Fe: 5 to 10; Cu: 0.8 to 2.0; Zn: 0.5 to 3; Na: 8 to 14; K: 8 to 14; Ca: 2 to 5; Mg: 4 to 8; and Mn: 1 to 5.

4,221,658
EFFECTING LIQUID-LIQUID CONTACT

William E. Hardwick, Stockton-on-Tees, England, assignor to Davy International (Oil & Chemicals) Limited, England

Filed Feb. 21, 1978, Ser. No. 879,501
Claims priority, application United Kingdom, Feb. 21, 1977, 07224/77
Int. Cl.² B01D *11/00*
U.S. Cl. 210—634 20 Claims



1. A method of effecting liquid-liquid contact between an aqueous liquid medium and an organic hydrophobic liquid medium, the aqueous liquid medium being capable of undergoing mass transfer with the organic hydrophobic liquid medium and the liquid-liquid contact being effected at a selected volume ratio in the range of from about 5:1 to about 1:5 which may be the same as or different from the ratio of the feed rates of the media, which method comprises:

providing a mixing zone in a mixing chamber, which mixing zone contains the aqueous liquid medium and the organic hydrohobic liquid medium;

feeding to the mixing chamber further aqueous liquid medium and further organic hydrophobic liquid medium;

agitating the liquid medium in the mixing zone so as to form therein a dispersion consisting of globules of one liquid medium dispersed in the other, the globules being of a size such that the dispersion is capable of disengaging substantially completely into two separate layers upon standing under gravity; and the volume ratio of the liquid media in the dispersion lying in the range of from about 5:1 to about 1:5 and corresponding substantially to the instanteous volume ratio of the media in the mixing zone;

retaining dispersion in the mixing chamber for a period of time sufficient to allow mass transfer to occur between the two liquid media;

permitting dispersion to flow from the mixing chamber into an upper baffled zone disposed above the mixing chamber and containing upper baffle means providing a plurality of flow paths therethrough for passage of liquid between the mixing chamber and an upper chamber disposed above the upper baffled zone;

permitting disengaged lighter medium to collect in the upper chamber;

maintaining settling conditions in the upper chamber to facilitate maintenance of a layer of disengaged lighter medium therein;

permitting heavier medium to flow back into the mixing chamber from the upper baffled zone;

permitting dispersion to flow from the mixing chamber into a lower baffled zone disposed below the mixing chamber and containing lower baffle means providing a plurality of flow paths therethrough for passage of liquid between the mixing chamber and a lower chamber disposed below the lower baffled zone;

permitting disengaged heavier medium to collect in the lower chamber;

maintaining settling conditions in the lower chamber to facilitate maintenance of a layer of disengaged heavier medium therein;

permitting lighter medium to flow back into the mixing chamber from the lower baffled zone;

continuously removing disengaged lighter medium from the upper chamber;

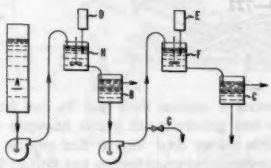
continuously removing disengaged heavier medium from the lower chamber; and

recovering disengaged lighter and heavier media each at a rate substantially equal to the rate of feed thereof to the mixing chamber to maintain the instantaneous volume ratio of the liquid media in the dispersion in the mixing zone substantially constant at a value in the range of from about 5:1 to about 1:5 which is independent of the ratio of the feed rates of the liquid media to the mixing chamber.

4,221,659
PROCESS FOR REDUCING DICHLOROBUTENE CONTAMINATION IN AQUEOUS PLANT WASTES

Alexander T. Harris; Thomas J. Kelly, both of Metairie, and Terry W. Redwine, La Place, all of La., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1979, Ser. No. 24,599
Int. Cl.² B01D *3/00, 11/00*
U.S. Cl. 210—639 7 Claims



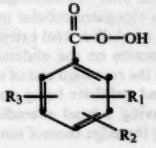
1. A process for reducing the level of 1,4-dichlorobutene-2 in aqueous wastes from an integrated chloroprene-manufacturing process, said integrated process comprising at least a dichlorobutene isomerization step and a 3,4-dichlorobutene-1 dehydrochlorination step, said process for reducing the level of 1,4-dichlorobutene-2 comprising the steps of combining waste water from the dichlorobutene isomerization step with sodium chloride brine from the 3,4-dichlorobutene-1 dehydrochlorination step in such proportions that the concentration of sodium chloride in the combined solution is about 1–5 weight percent and extracting the combined solution, maintained at a pH of less than about 6, with about 0.5–4.0 weight percent of a liquid hydrocarbon.

4,221,660
METHOD FOR DISINFECTING

Heinz Eggensperger, Hamburg; Wolfgang Beilfuss, Hamburg-Hummelsbüttel, and Wolfgang Zerling, Kaltenkirchen, all of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 852,579, Nov. 17, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,497
Int. Cl.² C02B *3/10*
U.S. Cl. 210—764 3 Claims

1. A method for disinfecting an aqueous system contaminated with bacteria and/or fungi which comprises contacting the aqueous system with at least one solid aromatic percarboxylic acid having the formula



where R_1 and R_2 independently represent hydrogen or a radi-

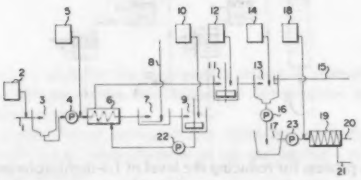
cal selected from the group consisting of chloro, bromo, fluoro, nitro, cyano, trifluoromethyl, carboxyl, methoxycarbonyl, aminocarbonyl, alkyl having from 1 to 5 carbon atoms, phenyl, methoxy, ethoxy, acetoxy, acetyl and hydroxysulfonyl; and R_3 is a radical selected from the group consisting of those defined for R_1 and R_2; or R_2 and R_3 when taken together and attached to adjacent carbon atoms form, together with the ring to which they are attached, a naphthalene ring; where the solid aromatic percarboxylic acid has a solubility weight for weight in water not greater than about 1% and where the aqueous system is contacted with a weight-percent amount of the aromatic percarboxylic acid which is in excess of its solubility in the aqueous system.

4,221,661

METHOD OF DEHYDRATING ORGANIC SLUDGE

Tohru Shimizu, Atsugi; Hideki Haji, and Fujiaki Mochizuki, both of Yokohama, all of Japan, assignors to Kurita Water Industries Ltd., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,325
Claims priority, application Japan, Jun. 20, 1978, 53/74564
Int. Cl.³ C02F *11/14*
U.S. Cl. 210—721 **5 Claims**



1. A method for dehydrating sewage sludge, which consists essentially of the steps of: adding to and mixing with sewage sludge having a solids content of from 0.5 to 8% by weight, an acid selected from the group consisting of hydrochloric acid and sulfuric acid to adjust the pH of said sewage sludge to a pH of from 3 to 4; then injecting steam into said sewage sludge to raise the temperature thereof to from 70° to 95° C.; then adding to said heated sewage sludge from 1,000 ppm to 2,000 ppm of oxidizer selected from the group consisting of hydrogen peroxide, potassium persulfate and ozone, and mixing said oxidizer with said sewage sludge for from 10 to 60 minutes to transform said sewage sludge to a modified sludge which is easy to dehydrate; then adding an alkali selected from the group consisting of slaked lime and caustic soda to said modified sludge to adjust the pH of said modified sludge to a pH of from 5 to 7; then adding coagulant to said modified sludge to coagulate solids therein; and then filtering said modified sludge to remove water therefrom.

4,221,662

POOL SKIMMING DEVICE

John Joseph, 2827 Echo Way, Sacramento, Calif. 95825

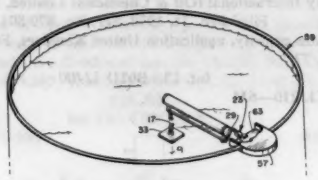
Filed Oct. 23, 1978, Ser. No. 953,897
Int. Cl.² E04H *3/20*
U.S. Cl. 210—169 **5 Claims**

1. A swimming pool skimming aid for directing surface debris to the skimmer inlet of a swimming pool, comprising

a body having an elongated tubular main section closed on both ends, and a stabilizer keel extending along the length of said main section on the underside thereof, from the forward end to the rearward end of said body, said tubular main section and stabilizer being one piece,

said stabilizer having a bead extending the length of the stabilizer along the edge thereof not attached to the main section.

means to restrict the movement of the forward end of said body comprising a weight on a line attached to the forward end of said body on the stabilizer, and



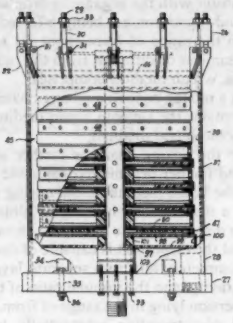
means to detachably secure the rearward end of said body to a pool skimmer inlet, said means being attached at the rearward end of said body.

4,221,663

MULTIPLE PLATE FILTER APPARATUS

Frank Little, Au Gres, Mich., assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Oct. 6, 1978, Ser. No. 949,141
Int. Cl.² B01D *39/08, 25/02, 29/34*
U.S. Cl. 210—193 **8 Claims**



1. Filter apparatus comprising:

(a) a tank;

(b) a plurality of filter units stacked in said tank, each of said units including filter bag means which define spaced filtering surfaces, and mesh material for supporting said bag means while permitting fluid flow through said surfaces;

(c) spacer means interposed between said units for directing fluid to the filtering surfaces of adjacent filter units, and

(d) outlet means extending through said filter units for receiving the filtrate from each unit;

(e) said bags including a dish shaped filter surface including a circular outer wall bounded by an elastic lip for holding the filter surface in contact with a filter unit.

8. In a filtering tank including an inlet and an outlet pipe, a modular filter unit for providing dual filtering surfaces to a fluid within the tank comprising:

(a) a circular plate having a center opening to fit over the outlet pipe, and slots extending radially from the opening; said plate defining an outside diameter;

(b) two annular hubs attached to opposed surfaces of said plate;

(c) two double layer meshes attached to opposed surfaces of said plate and to the hubs; said meshes co-extensive in diameter with the outside diameter; and

(d) two filtering materials, each comprising a dish shaped filter bag including a circular wall bounded by an elastic lip, a central aperture, and an annular gum washer attached to the bag with an inside diameter co-extensive with the outside diameter of the central aperture; a first of

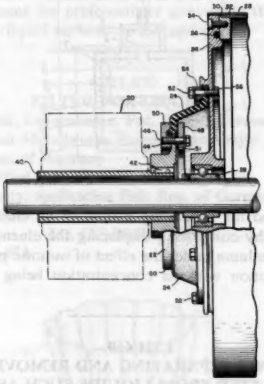
said materials fitting over a first of said double layer meshes with its gum washer contacting a first hub and its circular wall contacting the outside diameter of the plate and maintained in place by a first elastic lip contacting a second of said double layer meshes near said outside diameter; the second of said filtering materials fitting over the second of said double layer meshes with its gum washer contacting a second of said hubs, the second circular wall contacting the circular wall of said first material and a lip contacting an outer surface of said first material to maintain the two filtering materials in a filtering position.

4,221,664

DIRECT COUPLED DRIVE FOR A MAGNETIC SEPARATOR

Arland D. Lamke, Franklin, Wis., assignor to Magnetics International, Inc., Maple Heights, Ohio

Filed Aug. 2, 1978, Ser. No. 930,812
Int. Cl.[2] B07B *1/26*
U.S. Cl. 209—213 **1 Claim**



1. In a magnetic separator having a drum, a frame, a through shaft coupled to said frame and extending through said drum, a motor for imparting rotational motion to said drum through an improved direct drive comprising:

a sleeve concentrically disposed about a portion of said shaft for rotation relative to said shaft;

a flexible coupling connected at one end portion to said sleeve and connected at the other end portion to said drum, said flexible coupling providing a seal against contaminants traversing from one side of said coupling to the other; and

a prime mover mounted on said frame for imparting direct drive rotational motion to said sleeve whereby said sleeve drives said flexible coupling and said drum about said through shaft.

4,221,665

RAISIN HARVESTING APPARATUS

Edward Decker, 15200 W. Peach Ave., Livingston, Calif. 95334

Filed Oct. 30, 1978, Ser. No. 955,776
Int. Cl.[2] B07B *9/00*
U.S. Cl. 209—247 **12 Claims**

1. A raisin harvester for picking-up raisins on unrolled trays, comprising:

an elongated, wheeled chassis having a front end provided with a trailer hitch for connection to a tractor, and a rear end;

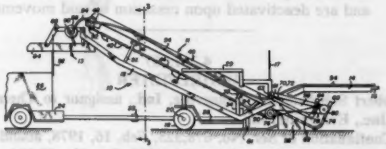
shaker means affixed to said rear end and including and apertured screen and means for agitating said screen;

a material handling assembly pivotally attached to said chassis at points along its longitudinal axis, said material handling assembly including

conveyor means extending along said longitudinal axis and including an elongated trough and an endless conveyor belt for moving articles disposed thereon from a receiving end to a discharge end, said discharge end being disposed above said shaker means;

fork means disposed forward of an affixed to the receiving end of said trough, said fork means being carried with its front end at substantially ground level so as to pass under a paper tray supporting raisins to be harvested, said fork means including a first plurality of elongated tines of a first length disposed in parallel spaced-apart relationship to each other, and a second plurality of elongated tines of a second length shorter than said first length respectively disposed between said first tines;

draper means including a first sprocket means affixed to said trough and disposed above and forward of the



forward end of said fork means, a second sprocket means disposed above the receiving end of said conveyor means and draper web means driveably supported by first and second sprocket means such that said web means passes over the tops of said first and second sprocket means and drapes downwardly therefrom so as to contact a substantial portion of the length of said fork means; and

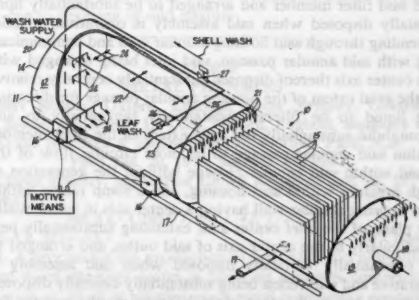
drive means for driving said conveyor means and said draper means such that an open tray containing raisins and engaged by said fork means is also engaged by said web means and drawn along said fork means to the receiving end of said conveyor means, said conveyor means thereafter conveying the tray and raisins past a worker station where the tray is separated from the raisins and thereafter conveying the raisins onto the screen of said shaker means where sand and other particulate matter is separated therefrom.

4,221,666

FILTRATION APPARATUS

Henry C. Hedberg, Jr., Gonzales, La., assignor to Ormet Corporation, Burnside, La.

Filed Mar. 19, 1979, Ser. No. 21,697
Int. Cl.[3] B01D *25/28*
U.S. Cl. 210—236 **11 Claims**



1. A filtration apparatus comprising:

a body shell for receiving a supply of liquid under pressure;

an array of generally rectangular, planar filter elements arranged upright within said shell and substantially parallel to the axis of the body shell and to each other;

means for moving one of said shell or filter elements away from and towards the other of said shell or filter elements so that there is relative lateral movement between said shell and said filter elements;

means for introducing liquor to be filtered into said shell and means for removing filtrate from the shell;

inlet means for introducing wash liquid under pressure into said shell and outlet means for removing wash liquid from the shell; and

a plurality of spray nozzles operatively connected to said inlet means and positioned over said filter elements, wherein said nozzles and filter elements move with respect to each other by means of said relative lateral movement and said nozzles clean said elements during said relative lateral movement and wherein said nozzles are activated upon initiation of said relative lateral movement and are deactivated upon cessation of said movement.

4,221,667

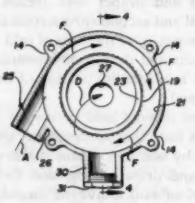
WHIRLFILTER

Robert Suhrheinrich, Evansville, Ind., assignor to Chem-Farm Inc., Evansville, Ind.

Continuation of Ser. No. 878,325, Feb. 16, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,194

Int. Cl.[2] B01D *29/40*

U.S. Cl. 210—304 **4 Claims**



1. A compact and relatively small filter assembly comprising a cylindrical housing having an annular sidewall of relatively short axial extent and a pair of planar end walls, said annular sidewall defining a diameter greater than the axial extent of the housing; a foranimous cylindrical filter member of right cylindrical configuration disposed within said housing between and enclosed by said housing end walls and having a diameter dimension smaller than the diameter dimension of said housing annular sidewall with its central axis co-incident with the central axis of said housing defining therewith an annular passage exteriorly of the filter member and an inner cavity within the filter member; an outlet extending from said inner cavity substantially perpendicular to one of said end walls, having an axis co-incident to the central axis of said housing and said filter member and arranged to be substantially horizontally disposed when said assembly is operative; an inlet extending through said housing annular wall and communicating with said annular passage, said inlet being arranged with the center axis thereof disposed substantially centrally relative to the axial extent of the housing annular passage for directing the liquid to be filtered substantially tangentially to and throughout substantially the axial extent of the filter member within said annular passage to promote circular flow of the liquid within said annular passage without the generation of high pressure within said housing, and a sump recess within said housing annular wall having a center axis in substantially the plane of the inlet center axis, extending substantially perpendicularly to the center axis of said outlet, and arranged to be substantially vertically disposed when said assembly is operative and said recess being substantially centrally disposed relative to the axial extent of the housing annular passage for opening directly and radially away from the bottom of said annular passage and the circulating path of liquid flow so as to remove and retain by gravity filtered solid particles out of the circulating liquid path.

4,221,668

METHOD, APPARATUS AND SYSTEM FOR PRODUCING ELUENT FLOW IN LIQUID CHROMATOGRAPHY

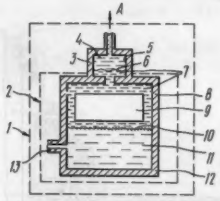
Evgeny B. Shmidel, ulitsa Profsojuznaya, 97, korpus 1, kv. 139; Viktor G. Berezkin, Leninsky prospekt, 40, kv. 54; Ljudmila N. Kolomiets, ulitsa Avangardnaya, 12, kv. 60; Julia L. Sheftelevich, ulitsa Profsojuznaya, 97, korpus 1, kv. 139, and Valery E. Shepelev, ulitsa Khalturninskaya, 4, korpus 2, kv. 28, all of Moscow, U.S.S.R.

Filed May 4, 1979, Ser. No. 36,174

Claims priority, application U.S.S.R., May 5, 1978, 2606052; May 5, 1978, 2606053

Int. Cl.[2] B01D *15/08*

U.S. Cl. 210—635 **9 Claims**



1. A method for producing a flow of an eluent in liquid chromatography comprising displacing the eluent to a chromatographic column under the effect of osmotic pressure of a substance solution with its concentration being maintained constant.

4,221,669

SYSTEM FOR SEPARATING AND REMOVING OIL BASED MATTER FROM LIQUIDS SUCH AS WATER

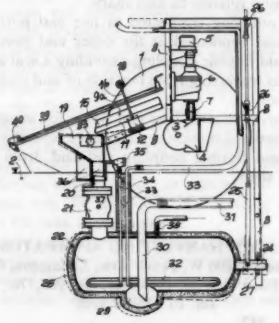
Giancarlo Ravagnan, Via Euganea, 33, Padova, Italy

Filed Dec. 20, 1977, Ser. No. 862,453

Claims priority, application Italy, Dec. 28, 1976, 41710 A/76

Int. Cl.[2] E02B *15/04*

U.S. Cl. 210—104 **1 Claim**



1. A system for separating and removing oil based matter from liquids such as water, comprising in combination, a container, adjacent thereto a plurality of vertical rotating discs partly immersed in the liquid containing oil based matter, scraping blade means operative to separate from said discs those oil based materials which adhere thereto and to convey such materials to said container, swingable spring biased sup-

port means for said scraping blade means to urge yeldably said scraping blade means against said discs, controlled pressure fluid means for pressurizing said container to discharge said materials from said container, valve means for said pressure fluid means, control means for periodically activating said pressure fluid means and wherein according to the improvement said control means include an arrangement responsive to the weight of said first container comprising hinge means for supporting said container pivotally about an horizontal axis of said hinge means, said hinge means being arranged offset from the center of gravity of said container, a linkage supporting an end of said container remote from said hinge means to hold in balance said container, said linkage having spring means allowing limited angular movements of said containers and an actuating rod for actuating said pressure fluid means when the unbalance of said container exceeds a preestablished value and wherein said container is an insulated and heated surge tank into which the separated oil based material is flown, said surge tank having pneumatically controlled normally open valve means allowing the flow by gravity of oil based material thereinto and responsive to the fluid pressure of said pressure fluid means to close said valve when pressure fluid is admitted to said surge tank to eject oil based material collected in said surge tank, means for preferentially conveying the materials present on the liquid surface toward said discs.

4,221,670

FILTER FOR LIQUIDS

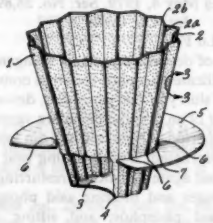
Gerhard Ziemek, Langenhagen, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshütte AG., Hanover, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,301

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808215

Int. Cl.² B01D *39/10*

U.S. Cl. 210—474 **6 Claims**



1. A beverage filter comprising a thin-walled body of hollow construction including a cylindrical or tapered hollow portion, being at least open to one side, the body having a wall and bottom structure, at least a portion thereof being made of thin metal foil and having apertures defining a sieve-like permeability in the range of from 40 metric mesh to 200 metric mesh; the cylindrical or tapered portion being provided with longitudinal grooves and ridges; and

a collar, circumscribing the said filter portion and being connected to these ridges to leave flow space along said grooves.

4,221,671

UPRIGHT CIRCULAR TUBE SETTLER WITH STACKED TUBE MODULES

Charles L. Meurer, 5937 E. Weaver Cir., Englewood, Colo. 80111

Filed Feb. 26, 1979, Ser. No. 15,108

Int. Cl.² B01D *43/00*

U.S. Cl. 210—522 **12 Claims**

1. For use in a tube settler of the type having vertically-disposed concentric tubular walls cooperating to define a tube well within a tank having a settling basin to receive the heavier settleable materials in the bottom, at least two donut-shaped tube modules stacked one atop another in tiered relation, each of said modules containing concentric rows of essentially straight fluid flow passages open at both ends, the passages in each row of a particular module being tilted relative to the vertical in the same direction and to substantially the same

degree the passages in each row being skewed in relation to all other passages the same row of the same tier, the, passages in each row of each tier connecting in fluid-conducting relation into at least one passage of at least one module in an adjacent tier, and the essentially straight passages thus connected, cooperating to provide means for directing fluid in a substantially spiral path around the tank.

4,221,672

THERMAL INSULATION CONTAINING SILICA AEROGEL AND ALUMINA

Joseph A. McWilliams, Worcestershire, England, assignor to Micropore International Limited, Droitwich, England

Filed Feb. 13, 1978, Ser. No. 877,543

Int. Cl.² C04B *43/02*

U.S. Cl. 252—62 **16 Claims**

1. Thermal insulation material comprising an unsintered mixture of microporous silica aerogel and a ceramic material including both ceramic reinforcing fibres and alumina, said alumina being present as at least a portion of said fibres or as particles or as both fibres and particles and said unsintered mixture being formed by intimately mixing as solids said ceramic material and fine particles of said silica aerogel and compacting said intimately mixed solids under pressure to form a self-bonded body, said ceramic material containing said alumina in an amount sufficient to raise the temperature to which said self-bonded body can be heated without significant shrinkage due to sintering of said mixture.

4,221,673

METAL PHENATES

Robert Robson, Oxford, England; Brian Swinney, Ontario, Canada, and Robert D. Tack, Oxford, England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 20, 1978, Ser. No. 871,016

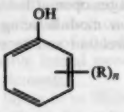
Claims priority, application United Kingdom, Jan. 28, 1977, 3556/77

Int. Cl.² C10M *1/54, 1/42, 1/20, 3/48*

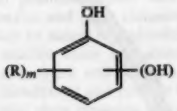
U.S. Cl. 252—42.7 **18 Claims**

1. A process for the production of sulfurized and non-sulfurized metal phenates useful as lubricant additives comprising reacting an alkali or alkaline earth metal base with a phenolic composition, said phenolic composition comprising:

(i) from 50% to 90% by weight of an alkyl phenol of the general formula:



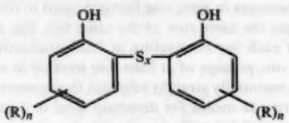
where n is from 1 to 5 and R is an alkyl group containing up to 60 carbon atoms, and from 50% to 10% by weight of an alkyl dihydroxy benzene of the general formula:



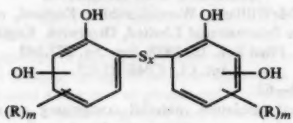
where m is from 1 to 4, R is as defined above and the hydroxyl groups are either ortho or meta to each other; or

(ii) the composition described under (i) above admixed with sulphur; or

(iii) from 50% to 90% by weight of a sulphurised alkyl phenol of the general formula:



where R is as defined above, n is 1 to 4 and x is from 1 to 4, and from 50% to 10% by weight of a sulphurised alkyl dihydroxy benzene of the general formula:



where R, and x are as defined above, m is 1 to 3 and the hydroxyl groups are either ortho or meta to each other; or

(iv) any mixture of two or more of (i), (ii) and (iii) above, and wherein at least one of the alkyl groups on the aromatic nucleus of both the phenol and the dihydroxy benzene contains at least 7 carbon atoms.

4,221,674

ORGANIC SULFONIC ACID STRIPPING COMPOSITION AND METHOD WITH NITRILE AND FLUORIDE METAL CORROSION INHIBITOR SYSTEM

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 915,640, Jun. 15, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 18,980

Int. Cl.² C11D *3/43;* B08B *3/08;* C23G *5/02*

U.S. Cl. 252—141 **20 Claims**

1. An improved organic stripping composition for removing polymeric organic substances from metallized inorganic substrates comprising at least one organic sulfonic acid of the formula $R—SO_3H$ where R is an organic radical selected from the group consisting of alkyl containing 1 to 18 carbon atoms, monohydroxyalkyl containing 1 to 18 carbon atoms, aryl containing 6 to 10 carbon atoms, monoalkylaryl wherein the alkyl group contains 1 to 14 carbon atoms, dialkylaryl wherein each alkyl group contains 1 to 4 carbon atoms, monohydroxyaryl containing 6 to 10 carbon atoms, monoalkyl-hydroxyaryl containing 7 to 11 carbon atoms and monochloro-hydroxyaryl containing 6 to 10 carbon atoms, optionally at least one organic solvent and an inhibitor system including about 5 to about 300 ppm by weight of fluoride by weight of composition, the improvement wherein the inhibitor system also includes about 0.01 to about 5% percent by weight of composition of a nitrile compound of the formula H—R—CN or of the formula NC—R—CN, where R is alkylene, arylene or alkylarylene.

4,221,675

PERCOMPOUND ACTIVATORS

Jean-Pierre Schirmann, Oullins; Bernard Dubreux, Francheville-le-Bas; Michel Bakes, La Celle Saint Cloud; Serge Y. Delavarenne, Francheville-le-Haut, and Marie-Christine Daude-Lagrave, Paris, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 764,642, Feb. 1, 1977, abandoned. This application May 23, 1978, Ser. No. 908,781

Claims priority, application France, Feb. 10, 1976, 76 03580

Int. Cl.² C09K *3/00;* C07C *69/02, 69/12*

U.S. Cl. 252—186 **8 Claims**

1. Activated compositions comprising a percompound and at least one α-acyloxy-N-acetylacylamide activator which is 2-acetoxy-N-acetylacetamide, 2-acetoxy-N-acetylpropionamide, 2-acetoxy-N-acetylbutyramide, 2-acetoxy-N-acetylisobutyramide, 2-acetoxy-2-methyl-N-acetylburyramide, 2-acetoxy-2-isobutyl-N-acetylpropionamide, or 1-acetoxy-N-acetylcyclohexane carboxamide.

4,221,676

PHOSPHOR PURIFICATION PROCESS

Charles B. Bruskotter, and David R. Hamilton, both of Ottawa, Ohio, assignors to GTE Products Corporation, Stamford, Conn.

Filed May 4, 1979, Ser. No. 35,890

Int. Cl.² C09K *11/10*

U.S. Cl. 252—301.6 F **9 Claims**

1. In a method of decontaminating a manganesearsenic activated zinc orthosilicate phosphor the steps comprising: preparing a hot aqueous slurry of said phosphor, deionized water and an alkali metal salt of an organic chelating agent; agitating said slurry for a given period of time; settling out said phosphor and decanting the suprernatent liquid; rinsing said phosphor with deionized water and again decanting; reslurring said phosphor with deionized water and filtering said phosphor from said slurry; drying said phosphor; and sifting said phosphor through a stainless steel mesh.

4,221,677

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GASES

Iacovos A. Vasalos; William D. Ford, both of Downers Grove, Ill., and Chuan-Kang R. Hsieh, Corte Madera, Calif., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 748,555, Dec. 8, 1976, Pat. No. 4,153,535, which is a continuation-in-part of Ser. No. 642,545, Dec. 19, 1975, abandoned. This application Mar. 19, 1979, Ser. No. 21,883

Int. Cl.² B01J *29/04*

U.S. Cl. 252—455 Z **31 Claims**

1. A composition of matter comprising a particulate physical mixture of:

(a) a particulate solid cracking catalyst for cracking hydrocarbons comprising a crystalline aluminosilicate zeolite in association with a matrix wherein the amount of said cracking catalyst is in excess of about 30 weight percent with respect to the particulate physical mixture; and

(b) a particulate solid other than said particulate cracking catalyst comprising at least one free or combined first metal selected from the group consisting of sodium, magnesium,

calcium, strontium, barium, scandium, titanium, chromium, molybdenum, manganese, cobalt, nickel, antimony, copper, zinc, cadmium, lead and the rare earth metals, at least one free or combined second metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum and rhenium, and at least one inorganic oxide selected from the group consisting of silica and alumina, wherein the amount of said first metal, calculated as the metal, is from about 50 parts per million to about 10 weight percent with respect to said particulate physical mixture, and the amount of said second metal, calculated as the metal, is from about 0.1 part per million to about 10 parts per million with respect to the particulate physical mixture.

4,221,678

NOBLE METAL CATALYST FOR DEHYDROGENATION OF CYCLOHEXANES

Toshio Ishikawa, Tokyo; Shuichi Niwa, Komae; Shoko Yamadaya, Tokyo, and Yoshio Orito, Musahino, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,181
Claims priority, application Japan, Sep. 27, 1978, 53-118761
Int. Cl.[2] B01J *21/04, 23/40, 35/04*
U.S. Cl. 252—466 PT **3 Claims**

1. A catalyst for the dehydrogenation of cyclohexane and alkyl-substituted cyclohexanes, which catalyst comprises an aluminum sponge and a noble metal of Group 8 of the Periodic Table of Elements carried on said aluminum sponge.

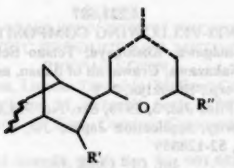
4,221,679

NORBORNYL-SUBSTITUTED PYRAN PERFUMES

Brian J. Willis, Bergenfield, N.J., and John W. Dittrick, Flushing, N.Y., assignors to Fritzsche Dodge & Olcott, Inc., New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,589
Int. Cl.[2] A61K *7/46;* **C11B** *9/00*
U.S. Cl. 252—522 R **6 Claims**

1. A fragrance composition which comprises a norbornyl-substituted pyran of the formula:



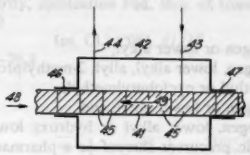
wherein the wavy line represents either a carbon-carbon single bond or a carbon-carbon double bond; and wherein the dashed lines represent either a carbon-carbon single bond or a carbon-carbon double bond such that two of the three dashed lines represent carbon-carbon single bonds; and wherein each R' and R'', when taken separately, is either hydrogen or a methyl group in combination with conventional fragrance ingredients, said pyran being present in an amount effective to impart fragrance to said composition.

4,221,680

TREATMENT OF SUBSTANCES

William H. Hardwick, Didcot, and Ronald Gayler, Wantage, both of England, assignors to United Kindgom Atomic Energy Authority, London, England

Filed Jul. 18, 1977, Ser. No. 816,684
Claims priority, application United Kingdom, Jul. 29, 1976, 31745/76
Int. Cl.[2] G21F *9/08, 9/16*
U.S. Cl. 252—301.1 W **13 Claims**



1. A process for the treatment of a substance contained in a solution or slurry comprising the steps of passing slugs of glass fiber along a tubular path through a microwave oven having an inlet and an outlet apertures, injecting onto the slugs, at a location in the oven, a solution or slurry containing radioactive waste, subjecting the slugs and solution or slurry to microwave radiation in the oven to dry the solution or slurry and produce with the slugs a fusible dried product suitable for fusing to give a glass-like solid material, allowing gases produced by the drying to pass along the tubular path countercurrent to the passage of the slugs such that the gases pass through and are thereby filtered by fresh slugs of glass fiber, and removing from the outlet aperture of the oven slugs comprising fusible dried product capable for being fused into a glass-like material.

4,221,681

METHOD OF FORMING GRAFT COPOLYMERS BY ATTACHING PRE-POLYMERIZED SIDE CHAINS TO A NATURAL OR UNSATURATED SYNTHETIC RUBBER BACKBONE, AND THE RESULTING GRAFT COPOLYMERS

David S. Campbell, Welwyn; David E. Loeber, and Andrew J. Tinker, both of Hertford, all of England, assignors to The Malaysian Rubber Producers' Research Association, Hertford, England

Filed Jul. 25, 1978, Ser. No. 927,905
Claims priority, application United Kingdom, Jul. 26, 1977, 31375/77
Int. Cl.[3] C08G *81/02*
U.S. Cl. 260—4 AR **9 Claims**

1. A method of forming a graft copolymer, which method comprises providing a reaction mixture of an ethylenically unsaturated natural or synthetic rubber in the solid state with a pre-polymer having one azodicarboxylate end group reactive towards ethylenically unsaturated groups of the rubber, and maintaining the mixture at an elevated temperature at least equal to the glass transition temperature of the pre-polymer but below the decomposition temperature of the rubber with intimate blending of the reactants, whereby the pre-polymer molecules react with and become attached to the rubber molecule backbone.

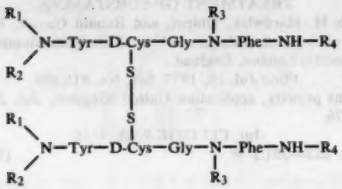
4,221,682

TETRAPEPTIDES HAVING ANALGESIC ACTIVITY

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,159
Int. Cl.[2] C08L *37/00;* **C07C** *103/52;* **A61K** *37/00*
U.S. Cl. 260—8 **4 Claims**

1. A polypeptide of the formula:



wherein

R_1 is hydrogen or lower alkyl;

R_2 is hydrogen, lower alkyl, allyl, 2-methylpropenyl, cyclopropylmethyl or cyclobutylmethyl;

R_3 is hydrogen or lower alkyl; and

R_4 is hydrogen, lower alkyl or hydroxy lower alkyl; the monomeric precursor thereof or a pharmaceutically acceptable salt thereof.

4,221,683

LOW TEMPERATURE CURING HIGH SOLID COATING COMPOSITION

Yasusi Nakate; Hiroshi Iwai, and Kiyoshi Nanishi, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed Mar. 15, 1978, Ser. No. 886,898

Claims priority, application Japan, Sep. 28, 1977, 52-116389; Sep. 30, 1977, 52-117652; Oct. 3, 1977, 52-118886; Oct. 3, 1977, 52-118887; Feb. 13, 1978, 53-15261

Int. Cl.[2] C08L *33/14, 61/32*

U.S. Cl. 260—15 **11 Claims**

1. A low temperature curing high solid coating composition which consists essentially of:

(I) 100 parts by weight of acrylic resin having a glass transition temperature of −21° to −50° C. and a hydroxyl value of 40 to 280, which is the copolymerization product of a monomer mixture of acrylic or methacrylic esters having an alkyl group having 1 to 12 carbon atoms and up to less than 15% by weight of acrylic acid or methacrylic acid;

(II) 5 to 160 parts by weight of a 1 to 4 carbon atom monohydric alcohol etherified aminoformaldehyde resin; and

(III) 0.5 to 6.0 parts by weight to 100 parts by weight of solid content of the above resin mixture of the items (I) and (II) of acid catalyst.

4,221,684

ABSORBENT POLYMERIC COMPOSITIONS DERIVED FROM CORN FLOUR AND STARCH

Phillip Antholz, and E. Jack Swarthout, both of Paris, Ill., assignors to Illinois Cereal Mills, Paris, Ill.

Filed Dec. 18, 1978, Ser. No. 970,313

Int. Cl.[2] C08L *3/02*

U.S. Cl. 260—17.4 GC **10 Claims**

1. In a method of forming a water-insoluble, aqueous fluid-absorbing copolymer composition wherein acrylonitrile is graft copolymerized onto a starch or corn flour-containing substrate to form a graft copolymer, the graft copolymer saponified to form a water-soluble saponified graft copolymer, isolating and drying said saponified graft copolymer to form a water-insoluble, aqueous fluid-absorbing copolymer composition, the improvement comprising isolating the saponified graft copolymer from solution by alcohol precipitation whereby an alcohol is added to an aqueous solution of said saponified graft copolymer at a rate sufficient to form a colloidal precipitate of said graft copolymer without any excess of the alcohol accumulating in said solution, whereupon the addition of said alcohol is ceased upon complete formation of said colloidal precipitate and the saponified graft copolymer composition is recovered and dried with minimal exposure to water.

4,221,685

WATER-DISPERSED FILM-FORMING LACQUER CONTAINING AIR-DRYING ALKYD RESINS AND ETHYLENE OXIDE ADDUCTS OF HYDROPHOBIC COMPOUNDS

Helmut Eschwey, Dusseldorf-Benrath, Fed. Rep. of Germany; Joachim Galinke, deceased, late of Langenfeld, Fed. Rep. of Germany (by Renate Galinke, nee Jansen, heir), and Norbert Wiemers, Monheim-Baumberg, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,368

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754141

Int. Cl.[2] C09D *3/64, 5/02*

U.S. Cl. 260—22 A **13 Claims**

1. An aqueous-dispersed, film-forming vehicle suitable for lacquers, comprising:

(a) a water-insoluble air-drying alkyd resin;

(b) a surfactant consisting essentially of an adduct of allyl glycidyl ether units and ethylene oxide units with a hydrophobic moiety selected from the group consisting of long-chain aliphatic or long-chain alkylphenol moieties; and

(c) a water-based diluent.

4,221,686

ULTRAVIOLET RADIATION CURABLE PRINTING INK

Kazuo Sakiyama, Ibaragi; Hiroshi Ota, Kawanishi, and Hirosi Kato, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited and Sakata Shokai Ltd., both of Osaka, Japan

Filed Jan. 16, 1976, Ser. No. 649,728

Claims priority, application Japan, Jan. 22, 1975, 50-10033

Int. Cl.[2] C08L *63/10, 91/00;* **C08G** *18/04;* **C08F** *2/48*

U.S. Cl. 260—23 EP **11 Claims**

1. An ultraviolet radiation polymerizable compound containing a polymerizable unsaturated group in the molecule which is obtained by reacting a reaction product (I) prepared by the reaction between a higher fatty acid having 8 or more carbon atoms or an unsaturated monobasic acid, or a mixture of the two, and a polyisocyanate compound containing at least two isocyanate groups in the molecule, with a reaction product (II) prepared by the reaction between an unsaturated monobasic acid or a higher fatty acid having 8 or more carbon atoms, or a mixture of the two, and an epoxy compound containing at least two epoxy groups in the molecule, at least one of the reaction products (I) and (II) containing an unsaturated monobasic acid residue, wherein the ratio of the number of the acid groups to the isocyanate groups in preparing product (I) is 1: about 1.5 to 3.0 and wherein the ratio of the number of the epoxy groups to the acid groups in preparing product (II) is 1: about 0.8 to 1.2.

4,221,687

ANTI-YELLOWING COMPOSITION

Motonobu Minagawa, Koshigaya; Tetsuo Sekiguchi, Hasusa, and Kenji Nakazawa, Urawa, all of Japan, assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,814

Claims priority, application Japan, Jul. 7, 1977, 52-81219; Oct. 26, 1977, 52-128859

Int. Cl.[2] C08K *5/07*

U.S. Cl. 260—23 XA **23 Claims**

1. An anti-yellowing additive for minimizing the yellowing tendency when heated at 190° C. of environmentally acceptable stabilized vinyl chloride polymer compositions from which arsenic, cadmium, lead, mercury, and thallium are substantially excluded, comprising in combination (A) at least one basic inorganic oxide, hydroxide, phosphate, phosphite, nitrate, nitrite, or sulfate of at least one of the metals lithium, sodium, potassium, magnesium, calcium, strontium, barium, zinc, titanium, aluminum, zirconium, or tin having in the pres-

ence of 100 parts of water per part a pH in the range of 7.4 to 13; and (B) for each part by weight of basic inorganic compound 0.01 to 1 part by weight of a 1,3-diketone compound represented by the formula

$$M(R-\overset{\overset{O}{\|}}{C}-CR'-\overset{\overset{O}{\|}}{C}-R'')_n$$

in which R is a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group or an alkylenedioxyhydrocarbon group or an alkylenedioxyhydrocarbon group having 1 to 18 carbon atoms; R′ is a hydrogen atom, an acyl group

$$R'''\overset{\overset{O}{\|}}{C}$$

where R‴ is alkyl or a hydrocarbon group having 1 to 18 carbon atoms; R″ is a hydrogen atom or a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group, or an alkylenedioxyhydrocarbon group having 1 to 18 carbon atoms; M is hydrogen or a metal selected from the group consisting of lithium, sodium, potassium, strontium, barium, zinc, aluminum, and antimony; and n is an integer from 1 to 3 depending on the valence of M.

19. An enviromentally acceptable stabilized vinyl chloride polymer composition protected against yellowing and from which arsenic, cadmium, lead, mercury, and thallium are substantially excluded, comprising a vinyl chloride polymer, a stabilizing amount of at least one heat stabilizer, and from 0.02 to 20 parts by weight per 100 parts by weight of vinyl chloride polymer of an anti-yellowing additive according to claim **1**.

22. A vinyl chloride polymer composition according to claim **19** in which the heat stabilizer is a barium, calcium, magnesium, or zinc salt of a non-nitrogenous monocarboxylic acid having 6 to 24 carbon atoms or a hydrocarbon-substituted phenol having 10 to 30 carbon atoms.

4,221,688

SILICONE EMULSION WHICH PROVIDES AN ELASTOMERIC PRODUCT AND METHODS FOR PREPARATION

Robert D. Johnson, Lincoln Township, Midland County; John C. Saam, and Christine M. Schmidt, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 28, 1978, Ser. No. 901,052
Int. Cl.[2] C08L *83/04*
U.S. Cl. 260—29.2 M **35 Claims**

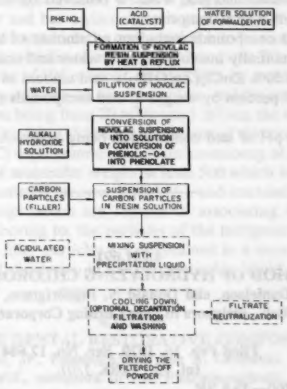
1. A silicone emulsion suitable to provide an elastomeric product upon removal of the water under ambient conditions comprising a continuous aqueous phase and a dispersed phase, the dispersed phase consists essentially of an anionically stabilized hydroxylated polydiorganosiloxane which contains about 2 silicon-bonded hydroxyls per molecule an organic tin compound and a colloidal silica, said silicone emulsion having a pH in a range of 9 to 11.5 inclusive.

4,221,689

METHOD OF PRODUCING RESIN SOLUTION AND A SUSPENSION OF PARTICLES THEREIN FOR USE AS A STARTING MATERIAL FOR THE MANUFACTURE OF A COATED FILLER POWDER FOR MAKING MOLDS AND THE LIKE

Francisco J. Dias, Jülich, and Hartmut Luhleich, Düren, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,720
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746020
Int. Cl.[3] C08L *61/10*
U.S. Cl. 260—29.3 **9 Claims**


PHENOL
ACID (CATALYST)
WATER SOLUTION OF FORMALDEHYDE
FORMATION OF NOVOLAC RESIN SUSPENSION BY HEAT & REFLUX
WATER
DILUTION OF NOVOLAC SUSPENSION
ALKALI HYDROXIDE SOLUTION
CONVERSION OF NOVOLAC SUSPENSION INTO SOLUTION BY CONVERSION OF PHENOLIC-OH INTO PHENOLATE
CARBON PARTICLES (FILLER)
SUSPENSION OF CARBON PARTICLES IN RESIN SOLUTION
ACIDULATED WATER
MIXING SUSPENSION WITH PRECIPITATION LIQUID
COOLING DOWN, (OPTIONAL DECANTATION, FILTRATION AND WASHING
FILTRATE NEUTRALIZATION
DRYING THE FILTERED-OFF POWDER

1. In a method of producing a dispersion of starting materials, consisting of carbonaceous particles suspended in an alkaline solution of phenolformaldehyde resin, for the process of making a composite molding powder of coated particles for the manufacture therefrom of artificial graphite or graphite-like material or molded articles, comprising the steps of dissolving phenol in an aqueous solution of formaldehyde, said aqueous solution containing between 10 and 35% of formaldehyde by weight and the phenol being dissolved in an amount of between 45 and 60% by weight of the total weight of the phenol and the formaldehyde solution put together, and thereafter reacting the phenol and formaldehdye to produce a resin which is used to coat carbonaceous particles, the improvement which consists in that

an acid if first added to the phenol and formaldehyde solution as a catalyst for promoting reaction between the phenol and formaldehyde after which the resulting mixture is heated to its boiling point and reflux-boiled;

thereafter the resin suspension thereby formed is considerably diluted with water;

the phenolic-OH groups of the resin are converted, after dilution of the suspension, to phenolates by adding an alkaline solution to the diluted resin suspension, thereby providing an alkaline phenol-formaldehyde resin solution suitable for use in said powder-making process; and

at a later stage in said powder-making process, there are added to said alkaline dilute phenolformaldehyde resin solution, particles of a material consisting essentially of carbon for subsequent precipitation of a solid resin coating thereon and said particles are suspended in said last-mentioned solution by mechanical agitation.

4,221,690

COATING COMPOSITION FOR ACCEPTOR SHEETS IN CARBONLESS COPYING

Kurt Riecke, Kempen, and Ferdinand Land, Viersen, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Düsseldorf-Oberkassel, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 921,942

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1977, 2731418

Int. Cl.[2] C08L *9/10*

U.S. Cl. 260—29.7 R 9 Claims

1. In a paper coating composition consisting essentially of water, a polymeric organic binder, and inorganic dispersed compounds capable of developing color by contact with at least one member of the group consisting of crystal violet lactone, malachite green lactone, N-benzoylleukomethylene blue, and N-phenylleukauramine after said coating is deposited on a substrate and said water is removed by drying, the improvement which comprises:

(a) said compounds including an amount of basic zinc salt substantially insoluble in said water and containing more than 50% $ZnCl_2(Zn(OH)_2)_4$, said amount as ZnO, being 2 to 50 percent by weight of said compounds on a dry basis; and

(b) the pH of said composition being below 7.

4,221,691

METHOD OF HYDROLYZING CHLOROSILANES

Jack B. Danielson, and Donald N. Ingebrigtson, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 16, 1979, Ser. No. 12,684

Int. Cl.[2] C08K *5/01*

U.S. Cl. 260—33.6 SB 7 Claims

1. A method of hydrolyzing a polyfunctional chlorosilicon composition comprising (a) forming a solution of 1 to 25 percent by weight of a hydrocarbon oil with a viscosity of at least 2 centistokes at 25° C. and 75 to 99 percent by weight of polyfunctional chlorosilicon composition (b) mixing the solution with an aqueous medium and (c) removing the hydrogen chloride and aqueous medium to obtain a nonsticky gel that is easily handleable in further processing steps, shipment or disposal operations.

4,221,692

PROCESS AND APPARATUS FOR THE PRODUCTION OF ADDITIVE-CONTAINING SYNTHETIC LINEAR POLYMERS

Giorgio Lambertini, Barlassina, and Gianfranco Sala, Milan, both of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa s.p.a., Milan, Italy

Filed Sep. 27, 1978, Ser. No. 946,531

Claims priority, application Italy, Sep. 30, 1977, 28138 A/77

Int. Cl.[2] C08L *77/00*

U.S. Cl. 260—37 N 7 Claims

1. A process for the production of an additive-containing synthetic linear polymer, which comprises

adding the additive in a fluid state to the polymer in a fluid state to obtain an additive-polymer mixture,

homogenizing said additive-polymer mixture to obtain a homogenized mixture, and

recycling at least 5% by weight of said homogenized mixture, based on the weight of said homogenized mixture, to said additive-polymer mixture.

4,221,693

COMPOSITION FREE OF SURFACE CURE INHIBITION AND METHOD FOR PREPARING THE SAME

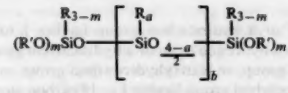
John C. Getson, 4394 Hampton Ct., Adrian, Mich. 49221, and Charles G. Neuroth, 10557 Crockett Hwy., Blissfield, Mich. 49228

Filed Mar. 2, 1979, Ser. No. 16,760

Int. Cl.[2] C08L *83/04*

U.S. Cl. 260—37 SB 12 Claims

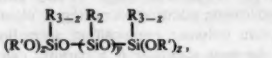
1. An organopolysiloxane composition which is stable under anhydrous conditions but when exposed to atmospheric moisture cures to an elastomeric solid at room temperature comprising (1) an organopolysiloxane of the formula



(2) an organosilicon compound selected from the group consisting of silanes of the formula

$$R''_nSi(OR')_{4-n}$$

and siloxanes of the formula



(3) a titanium compound of the formula

$$Ti(OR')_4$$

or partial hydrolyzates thereof in which R is selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals having from 1 to 18 carbon atoms and cyanoalkyl radicals, R' is an aliphatic hydrocarbon radical having up to 10 carbon atoms, R'' is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals having from 1 to 10 carbon atoms, a has an average value of from 1.9 to 2.0, b has a value greater than 10, m has a value of at least 2, n has a value of 0, 1 or 2, y has a value of from 0 to 10 and z has a value of 1, 2 or 3, with the proviso that the R' radicals in the siloxane, the organosilicon compound and the titanium compound must be identical and (4) carbon black which has been treated with a hydrophobic agent to impart hydrophobic properties thereto, in which the treated carbon black is inert to the R' radicals linked to the siloxane, the organosilicon compound and the titanium compound, said hydrophobic agent is selected from the group consisting of cyclic alkyl polysiloxanes and silicon compounds of the formula

$$(R'''_3Si)_eZ \text{ and } R'''_{e'}SiZ'_{4-e'}$$

in which R''' is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, Z and Z' are selected from the group consisting of halogen, hydrogen and a radical of the formula —OR'''', —NR''''X' and —ONR'''' and when e is 2, then Z may be selected from the group consisting of —O— and NX', R'''' is selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radicals, X' is selected from the group consisting of hydrogen and R'''', e is 1 or 2 and e' is 1, 2 or 3.

4,221,694

GLASS-FILLED POLYBUTYLENE TEREPHTHALATE COMPOSITIONS OF DIMINISHED WARPAGE

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,545
Int. Cl.[2] C08K 7/14
U.S. Cl. 260—40 R 16 Claims

1. In a thermoplastic polymeric composition comprising a glass fiber-filled polybutylene terephthalate, the improvement wherein the composition contains in admixture as the sole organic polymeric additive a minor proportion of an organic polymeric additive consisting of a substantially halogen-free linear aromatic polyester, the organic monomer residues of which consist of a bisphenol monomer residue and a dicarboxylic acid monomer residue, said polyester having an intrinsic viscosity of no more than about 0.5 dl./g., as determined from a 0.5% weight solution of the bisphenol polyester in symmetrical tetrachloroethane at 30° C., the weight proportion of the bisphenol polyester being less than 30% based on the combined weight of the glass fiber-filled polybutylene terephthalate and the bisphenol polyester.

4,221,695

ADSORBENT FOR ARTIFICIAL ORGANS

Kuniaki Hino, Tokyo; Yasuo Uehara, Iruma; Yasushi Nishimura, Tokyo; Kazuhiro Watanabe, Ichihara, and Yoshio Okada, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,493
Claims priority, application Japan, Feb. 6, 1978, 53/12140
Int. Cl.[2] C08K 9/00
U.S. Cl. 260—42.14 9 Claims

1. In an adsorbent for use in artificial organs including beads of activated carbon, the improvement which comprises: said beads of activated carbon being prepared by the steps of heating with continued stirring a mixture of a pitch having a softening point of 50° to 350° C., a carbon content of 80 to 97% by weight, an atomic ratio to hydrogen to carbon of 0.3 to 2.0 and a content of nitrobenzene-insoluble fraction below 60% by weight, an aromatic compound miscible with said pitch in an amount of 5 to 50 percent by weight of said pitch and a polymer and/or copolymer of chain hydrocarbon having said hydrocarbon moiety as a major component thereof, and thereby homogeneously liquifying said mixture, dispersing the thus liquified mixture in an aqueous solution containing a suspending agent and thereby obtaining beads of said mixture dispersed in said solution, and subjecting the thus obtained beads to a series of treatments of removing of said aromatic hydrocarbon, infusibilizing, carbonizing and activating.

9. The adsorbent according to claim 1 in which the surface of said beads adsorbed or is coated with a therapeutically effective amount of bio-compatible substance selected from the group consisting of albumin, gelatin, cellulose nitrate, cellulose acetate, poly(hydroxylethyl methacrylate) and their derivatives.

4,221,696

HEAT RESISTANT HOT-MELT SEALANT AND CAULKING COMPOUND

Mary J. Cook, and Kenneth W. Hyche, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,446
Int. Cl.[2] C08K 3/26; C08L 23/26
U.S. Cl. 260—42.46 8 Claims

1. A sealant and caulking composition capable of being used as a hot melt composition comprising a blend of

(a) about 3 to 12 percent by weight of at least one modified polyethylene,

(b) about 45 to 70 percent by weight of at least one filler having a particle size of less than 20 microns,

(c) about 15 to 35 percent by weight of an amorphous polyolefin, and

(d) about 1 to 4 percent by weight of a thixotropic additive.

4,221,697

COMPOSITE MATERIALS

Peter G. Osborn, Bourne End; Desmond W. J. Osmond, Windsor, and Barrie J. Thorpe, Stockport, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 578,863, May 19, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,406
Claims priority, application United Kingdom, May 29, 1974, 23751/74; Fed. Rep. of Germany, Oct. 18, 1974, 2449656
Int. Cl.[2] C08J 3/20
U.S. Cl. 260—42.53 22 Claims

1. A stable, fluid, mouldable and curable composition comprising (A) an organic liquid which is polymerisable to form a solid polymer and has a viscosity not greater than 50 poise at the temperature at which the composition is to be moulded, (B) finely divided particles of one or more inorganic fillers having a maximum size of 100 microns, at least 95% by number of the particles being of a size 10 microns or less, and the surface area of the particles being from 20 m^2/cc to 1 m^2/cc, the said particles constituting from 35 to 85% by volume of the total composition, and (C) a polymeric dispersant containing at least one component of molecular weight at least 500 which is solvated by the polymerisable organic liquid (A), and containing one or more groupings which are capable of associating with, and effecting anchoring to, the particles of the inorganic filler (B) whereby the filler particles are maintained in a state of stably deflocculated dispersion in the polymerisable liquid.

4,221,698

CARVABLE DENTAL RESTORATIVE COMPOSITIONS

Henry L. Lee, Jr., Pasadena, and Jan A. Orlowski, Altadena, both of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Continuation of Ser. No. 669,174, Mar. 22, 1976, abandoned, which is a continuation of Ser. No. 504,838, Sep. 10, 1974, abandoned. This application May 18, 1978, Ser. No. 906,926
Int. Cl.[2] C08K 3/34, 3/36, 3/40
U.S. Cl. 260—42.52 6 Claims

1. A composition of matter useful in forming dental restoratives consisting essentially of:

(a) from about 50% to about 80% by weight of the composition of finely divided inorganic filler particles selected from the group consisting of quartz, glass, silica, silicates, and mixtures thereof;

(b) minor amounts of conventional additives selected from the group consisting of curing agents, inhibitors, antioxidants, dyes, ultraviolet light absorbers, preservatives, and mixtures thereof, and

(c) as the balance of said composition, a liquid resin binder formed from a mixture of about 20% to about 40% by weight of said binder of allyl methacrylate, and the balance of said binder being 2,2-bis[4'-(3''-methacryloyl-2''-hydroxypropoxy)phenyl]propane;

said liquid resin being polymerizable by curing agents incorporated in the composition, so that upon admixture and placement in a tooth cavity, the composition hardens in situ, polymerizing in two stages, first to a soft set condition with a Shore D hardness of 45 within about three minutes or less at human body temperature of 37° C., in which soft set condition it is carvable, then after an interval adequate to permit carving, to a hard set condition, said interval being about three to four minutes from the time the composite attains a Shore D hardness of 45 at 37° C., to the time the composite attains a Shore D hardness of 85.

2. A dental restorative composite comprising a mixture of:

(a) from about 50% to about 80% by weight of the composite mixture of finely divided inorganic filler particles se-

lected from the group consisting of quartz, glass, silica, silicates, and mixtures thereof,

(b) minor amounts of conventional additives selected from the group consisting of inhibitors, antioxidants, dyes, ultraviolet light absorbers, preservatives, and mixtures thereof;

(c) as the balance of said composite mixture, a liquid resin binder formed from a mixture of at least two monomers, one of said monomers forming 20% to 50% by weight of said binder and being selected from the group consisting of allyl methacrylate, allyl acrylate, allyl glycidyl ether, diallyl fumarate, diallyl maleate, diallyl phthalate, butene-1,4-dimethacrylate, butene-1,4-diacrylate, 4-hydroxy butene methacrylate, 4-hydroxy butene acrylate, and 1-methacryloyl-2-acryloyl-propane; and the other of said monomers forming 50% to 80% by weight of said binder and being selected from the group consisting of: 2,2-bis[4'-(3''-methacryloyl-2''-hydroxypropoxy)phenyl]propane, polyethylene glycol dimethacrylates, cyclohexyl methacrylate, and mixtures thereof; and

(d) a free radical initiator and an activator for the initiator, these being effective to initiate polymerization of the binder;

said liquid resin binder being addition polymerizable by said free radical initiating means so that upon admixture, and placement in a tooth cavity, the composite hardens in situ, to polymerize in two stages, first to a first stage soft set condition in which it is carvable, then after an interval adequate to permit carving, to a second stage hard set condition, said interval being at least two minutes from the time the composite attains a first stage soft set Shore D hardness of 45 at 37° C., to the time the composite attains a second stage hard set Shore D hardness of 85.

4,221,699
PRODUCTION OF EXTRUDED POLYOLEFIN PRODUCTS

Claude J. Arnaud, Riom; Jean M. Quemner, Clermont-Ferrand, and Gaston P. Roche, Riom, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed May 1, 1978, Ser. No. 901,296

Claims priority, application France, Jun. 14, 1977, 77 18128

Int. Cl.[2] C08K *5/36, 5/37*

U.S. Cl. 260—45.7 S **14 Claims**

1. In a method of fabricating extruded products based on crosslinked polyolefin compositions, wherein a volatile and flammable liquid organic peroxide is introduced, as a crosslinking agent, directly at the inlet of an extruder, simultaneously with the introduction of the polyolefin to be crosslinked and an antioxidant, said antioxidant acting as a protective agent, the improvement comprising:

employing as said antioxidant a member selected from the group of thio-bisphenols soluble in said peroxide, having a melting point of less than 125° C. of the general formula:

$$(R'C_6H_2—R''OH)_2S_x$$

wherein x is a whole number equal to 1, 2 or 3 and R' and R'' are each alkyl.

4,221,700
STABILIZED POLYMER COMPOSITION

Motomobu Minagawa; Mitsuo Akutsu, both of Urawa; Hiroshi Fujiwara, Omiya, and Masayuki Kashiki, Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Jul. 5, 1978, Ser. No. 922,144

Claims priority, application Japan, Jul. 4, 1977, 52-80065; Jul. 11, 1977, 52-83186

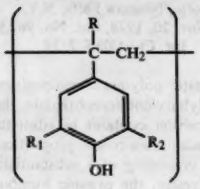
Int. Cl.[2] C08K *5/41, 5/42, 5/52*

U.S. Cl. 260—45.7 PH **26 Claims**

1. A stabilized synthetic polymer composition comprising

(1) 100 parts by weight of a synthetic polymer;

(2) 0.001 to 5 parts by weight of a poly(alkylated alkenylphenol) composed substantially of monomeric units represented by the following formula (I)



(I)

wherein R represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; R_1 represents an alkyl group having 1 to 18 carbon atoms; and R_2 represents a hydrogen atom or an alkyl group having 1 to 18 carbon atoms; and

(3) 0.001 to 5 parts by weight of an auxiliary stabilizer selected from the group consisting of a polyhydric alcohol ester of an alkylthioalkanoic acid, a polyester of a thiodipropionic acid, and an organic phosphite compound.

4,221,701
STABILIZED SYNTHETIC POLYMERS

Michael Rasberger, Allschwil, and Jean Rody, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

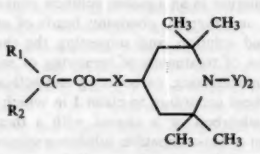
Continuation of Ser. No. 744,352, Nov. 23, 1976, abandoned, which is a division of Ser. No. 525,810, Nov. 21, 1974, Pat. No. 3,993,655. This application Jun. 13, 1978, Ser. No. 915,346

Claims priority, application Switzerland, Dec. 10, 1973, 017271/73

Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 N **11 Claims**

1. A composition of matter comprising an organic polymer normally subject to degradation by oxidation, light or heat, and as a stabilizer from 0.01 to 5% of at least one compound of the formula

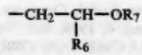


(I)

wherein

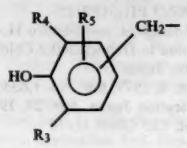
X can be oxygen or —NH—,

Y represents hydrogen, the radical —O., an alkyl group having 1 to 12 carbon atoms, an alkenyl group having 3 or 4 carbon atoms, a propargyl group, a benzyl group, or a group of the formula



wherein R_6 represents hydrogen, methyl or phenyl, and R_7 represents hydrogen, or an acyl group selected from the group consisting of acetyl, propionyl, hexanoyl, acryl, methacryl, 2-ethylhexanoyl, dodecanoyl, octadecanoyl and benzoyl,

R_1 represents a hydroxybenzyl group of formula (II)



(II)

wherein

R_3 and R_4 each independently represent an alkyl group having 1 to 8 carbon atoms, and

R_5 represents hydrogen or methyl, and

R_2 represents, if X is oxygen, hydrogen, or a hydroxybenzyl group of formula (II); if however, X is —NH—, only hydrogen.

4,221,702

9-THIABICYCLO [3,3,1] NONANEDIYL-2,6-BIS[3-(3,5-DI-TERT-BUTYL-4-HYDROXYPHENYL) PROPIONATE]

Edward L. Wheeler, Watertown, and Elmar H. Jancis, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,236

Int. Cl.[2] C08K *5/45*; C07D *335/00*

U.S. Cl. 260—45.8 kW **10 Claims**

1. 9-Thiabicyclo[3.3.1]nonanediyl-2,6-bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate].

2. A composition comprising an organic material normally subject to oxidative deterioration and a stabilizing amount of the compound of claim 1.

4,221,703

STABILIZATION OF POLYMERS CONTAINING POLY(ALKYLENE OXIDE) UNITS

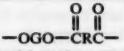
Guenther K. Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 586,744, Jun. 11, 1975, abandoned, which is a continuation of Ser. No. 441,659, Feb. 11, 1974, abandoned, which is a division of Ser. No. 316,268, Dec. 18, 1972, Pat. No. 3,896,078. This application Aug. 8, 1978, Ser. No. 931,899

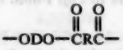
Int. Cl.[2] C08K *5/16*

U.S. Cl. 260—45.9 NC **4 Claims**

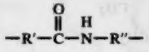
1. A stabilized copolyetherester composition consisting essentially of a mixture of (a) a copolyetherester consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, said long chain ester units being represented by the formula



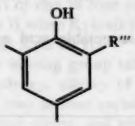
and said short chain ester units being represented by the formula



where G is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight of about 400–6000 and a carbon-to-oxygen ratio of about 2.0–4.3; R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300 and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; provided said short chain ester units amount to about 15–95% by weight of said copolyetherester, and (b) an amide-containing phenolic antioxidant of the formula



wherein R′ and R″ are aliphatic hydrocarbon radicals or substituted aliphatic hydrocarbon radicals containing 2–12 carbon atoms and wherein R′ is substituted with the radical of the formula



where R‴ is a tertiary alkyl group, said amide-containing phenolic antioxidant being present in an amount sufficient to provide at least about 0.015 weight percent amide linkages thus stabilizing the copolyetherester against oxidative degradation at elevated temperatures by serving both as an antioxidant and a source of amide linkages.

4,221,704

EXTRACTION OF THAUMATIN

Michael J. Daniels, Reading, and John D. Higginbotham, Beech Hill, NR. Reading, both of England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Feb. 28, 1979, Ser. No. 16,344

Claims priority, application United Kingdom, Mar. 1, 1978, 8111/78

Int. Cl.[2] A23J *1/00*

U.S. Cl. 260—112 R **9 Claims**

1. In a process for the extraction of thaumatin from fruit of *T. daniellii* in which the thaumatin is extracted with an aqueous extractant and the thaumatin is thereafter isolated, the improvement comprising the steps of skinning the fruit, drying the pulp and mechanically separating the arils from the remainder of the fruit, comminuting the dried aril and extracting the resultant powder with water containing an additive selected from food grade acids only in the absence of added salt, while maintaining the pH in the range of from 2.0 to 4.5.

4,221,705

NOVEL PEPTIDE TYPE ANTIBIOTIC AND THE PROCESS FOR THE PRODUCTION THEREOF

Shigeji Kondo, Sendai, Japan, assignor to Kakenyaku Kako Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,497

Claims priority, application Japan, Dec. 28, 1977, 52-157416

Int. Cl.[2] C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **2 Claims**

1. The polypeptide arginine-γ-hydroxyarginine-ornithine-threonine-ornithine-lysine-tyrosine.

4,221,706

CHROMOGENIC SUBSTRATES

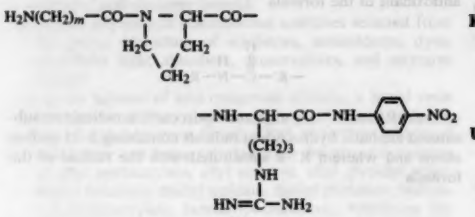
Akhtar Ali, Vernon Hills, and Jacob J. Plattner, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 14, 1979, Ser. No. 48,409

Int. Cl.[3] C07C *103/52*; C12Q *1/56, 1/38, 1/36*

U.S. Cl. 260—112.5 R **5 Claims**

1. A compound of the formula



and the biologically acceptable acid addition salts thereof, wherein m is 2 or 3.

4,221,707

TREATMENT FOR COMMERCIAL VEGETABLE PROTEIN PRODUCTS

Donald G. Reu, 2718 Avenue N, P.O. Box 39, Fort Madison, Iowa 52627

Continuation-in-part of Ser. No. 914,973, Jul. 6, 1978, abandoned. This application May 18, 1979, Ser. No. 40,318

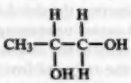
Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **17 Claims**

1. The process for reducing the residual flavor present in soybeans, soy protein concentrates, soy protein isolates, texturized soy protein, and soy flours which comprises:

treating said soy products with a nonionic surface active agent selected from a group consisting of polyoxyethylene (20) sorbitan monooleate, polyoxyethylene (20) sorbitan monostearate,

polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monolaurate in the amount of 0.1 to 10% based on the dry weight of said soy product being treated and with a wetting agent which is propylene glycol of the formula:



in the amount of 0.1 to 10% based on the dry weight of said soy product being treated.

4,221,708

METHOD FOR POLYMERIZATION OF LIGNIN

Stephen Y. Lin, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,284

Int. Cl.² C07G *1/00*

U.S. Cl. 260—124 R **9 Claims**

1. A two-step method for polymerizing technical lignin comprising;

(a) treating the lignin with from 0.5 to 3.5 moles of formaldehyde per 1,000 grams of lignin at a pH of from 10.5 to 11.5, and a temperature from 50° C. to 80° C. for 3 to 24 hours to form a lignin-formaldehyde adduct, and

(b) oxidizing the lignin-formaldehyde adduct at a temperature from 25° C. to 80° C. with air or molecular oxygen for 2 to 24 hours.

4,221,709

AZO PIGMENTS

Kimihide Kawamura, Koshigaya, and Shojiro Horiguchi, Hoya, both of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

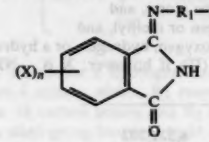
Filed Jan. 8, 1979, Ser. No. 1,835

Claims priority, application Japan, Apr. 27, 1978, 53/49232

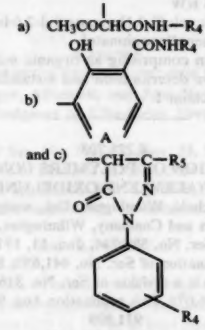
Int. Cl.² C09B *31/14*

U.S. Cl. 260—165 **10 Claims**

1. Azo pigments having the formula



wherein X represents hydrogen or a halogen atom, n represents an integer of 1 to 4, R_1 represents a substituted or unsubstituted aromatic group, R_2 represents a moiety of a coupling component which has one coupling site and is selected from the group consisting of



wherein R_4 represents phenyl, phthalimido or benzimidazolone group which can be substituted with a halogen atom, methyl, methoxy, ethoxy, nitro, carbamido, phenylcarbamoyl or acetylamino group, the A ring represents naphthalene ring, anthracene ring, anthrone ring, carbazole ring or dibenzofuran ring, and R_5 represents methyl, ethyl, carbomethoxy, carboethoxy or carbamido group.

4,221,710

PROCESS FOR PREPARING MICROCAPSULES BY POLYMERIZATION OF UREA AND FORMALDEHYDE IN THE PRESENCE OF GUM ARABIC

Yoshiyuki Hoshi, and Hiroharu Matsukawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Feb. 14, 1979, Ser. No. 12,088

Claims priority, application Japan, Feb. 14, 1978, 53-15675

Int. Cl.² C08L *5/00*

U.S. Cl. 260—17.3 **16 Claims**

1. A process for preparing microcapsules which comprises polymerizing urea and formaldehyde in the presence of gum arabic to thereby form a urea-formaldehyde resin wall around a previously dispersed hydrophobic oily solution.

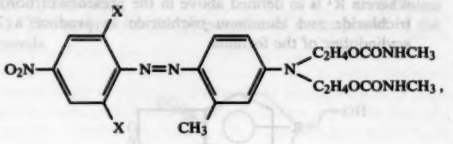
16. A pressure-sensitive recording sheet comprising a support having coated thereon microcapsules prepared by the process of claim 1 or 2.

4,221,711
BROWN TO VIOLET SUBSTITUTED PHENYL-SUBSTITUTED ANILINO AZO DYES

Norbert Grund; Guenter Hansen, both of Ludwigshafen, and Wolf-Dieter Kermer, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 7, 1978, Ser. No. 913,365
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726656
Int. Cl.[2] C09B *29/08, 29/26;* D06P *1/18, 3/54*
U.S. Cl. 260—207.1 1 Claim

1. A brown to violet colored azo dye of the formula:



wherein X is chlorine or bromine.

4,221,712
PROCESS FOR FORMING A METAL SULFONATE CONTAINING EPDM

Henry S. Makowski, Scotch Plains; Jan Bock, and Robert D. Lundberg, both of Bridgewater, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 9,871, Feb. 7, 1979, abandoned, which is a continuation of Ser. No. 855,762, Nov. 29, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 22,976
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—23.5 A 24 Claims

1. A process for preparing a gel-free cement of a neutralized sulfonated polymer, said cement having a Brookfield viscosity at 0.6 rpm at room temperature of less than about 20,000 cps which comprises:

(a) quenching a solution of an unneutralized sulfonated polymer dissolved in a nonreactive solvent with isopropanol, said unneutralized sulfonated polymer having about 10 to about 50 meq. of unneutralized sulfonate groups/100 grams of polymer, and said isopropanol added to a concentration level of about 5 to about 30 volume percent based on a volume of said nonreactive solvent; and

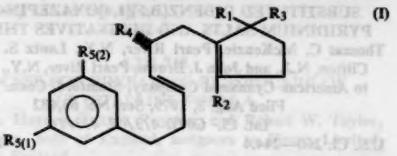
(b) neutralizing said unneutralized sulfonated polymer dissolved in said nonreactive solvent and said isopropanol with a neutralizing agent dissolved in water, said water at a concentration level of less than about 2.5 volume percent based on said volume of said nonreactive solvent to form said gel-free cement of said neutralized sulfonated polymer.

4,221,713
CYCLIZATION SUBSTRATES AND RELATED 11α-EQUATORIALLY-SUBSTITUTED STEROIDS

Filippus J. Zeelen, Heesch, and Marinus B. Groen, Schayk, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 23, 1978, Ser. No. 953,789
Claims priority, application Netherlands, Oct. 25, 1977, 7711666
Int. Cl.[3] C07J *5/00;* C07C *5/09;* C07J *71/00;* C07C *39/18*
U.S. Cl. 260—239.55 R 20 Claims

1. A cyclisation substrate compound of the formula:



wherein:

(a) R_1 is H or alkyl of one to four carbons;

(b) R_2 is H or alkyl of one to four carbon atoms, with the proviso that R_1 is H when R_2 is alkyl, and with the proviso that R_2 is H when R_1 is alkyl;

(c) R_3 is a suitable leaving group selected from the group consisting of hydroxy, alkoxy of one to four carbons, alkoxyalkoxy of two to four carbons, acyloxy of one to about seven carbon atoms, and trialkysiloxy of less than fifteen carbons;

(d) R_4 is methyl; and

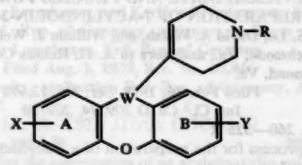
(e) $R_{5(1)}$ and $R_{5(2)}$ are each H, alkyl of one to eight carbons, or optionally esterified or etherified hydroxy selected from the group consisting of hydroxy, alkoxy of one to four atoms, alkoxyalkoxy of two to four carbons, trialkylsilyloxy of one to fifteen carbons, cycloalkoxy of four to eight carbons, carboxyacyloxy of one to seven carbons, or heterocyclic ether of five to seven atoms and four to six carbons, with the proviso that at least one of $R_{5(1)}$ and $R_{5(2)}$ is hydrogen.

4,221,714
11-(1,2,3,6-TETRAHYDRO-SUBSTITUTED-4-PYRIDYL)-DIBENZ[b,f][1,4]OXAZEPINES

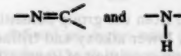
Thomas C. McKenzie, and John J. Brown, both of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 3, 1979, Ser. No. 63,481
Int. Cl.[2] C07D *413/02*
U.S. Cl. 260—244.4 8 Claims

1. A compound selected from those of the formula:



wherein phenyl rings A and B may be unsubstituted, mono-, di- or trisubstituted and X and Y are each selected from the group consisting of hydrogen, halogen, lower alkyl (C_1–C_6), lower alkoxy (C_1–C_6), methylthio, trifluoromethyl, nitro, amino and di(lower)alkylsulfamoyl; R is selected from the group consisting of lower alkyl (C_1–C_6) and hydroxy lower alkyl; W is selected from the group consisting of



and the pharmaceutically acceptable salts thereof.

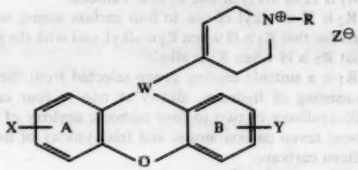
4,221,715

SUBSTITUTED DIBENZ[B,F][1,4]OXAZEPIN-11-YL PYRIDINIUM SALTS AND DERIVATIVES THEREOF

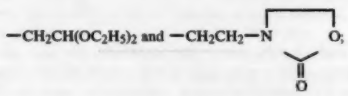
Thomas C. McKenzie, Pearl River, N.Y.; Lantz S. Crawley, Clifton, N.J., and John J. Brown, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 3, 1979, Ser. No. 63,482
Int. Cl.[2] C07D *413/02, 413/14*
U.S. Cl. 260—244.4 14 Claims

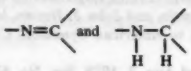
1. A compound of the formula:



wherein phenyl rings A and B may be unsubstituted, mono-, di- or trisubstituted and X and Y are each selected from the group consisting of hydrogen, halogen, lower alkyl (C_1–C_6), lower alkoxy (C_1–C_6), methylthio trifluoromethyl, nitro, amino and di(lower)alkylsulfamoyl; Z is selected from the group consisting of chlorine, bromine and iodine; R is selected from the group consisting of lower alkyl (C_1–C_6), hydroxy lower alkyl, propargyl,



W is selected from the group consisting of



and the pharmaceutically acceptable salts thereof.

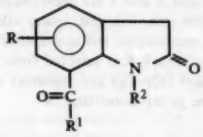
4,221,716

INTERMEDIATE AND PROCESS FOR THE PREPARATION OF 7-ACYLINDOLIN-2-ONES

Young S. Lo; David A. Walsh, and William J. Welstead, Jr., all of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

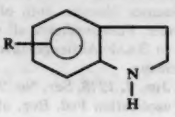
Filed Feb. 16, 1979, Ser. No. 12,698
Int. Cl.[2] C07D *209/34, 209/08*
U.S. Cl. 260—325 R 14 Claims

1. A process for the preparation of a 7-acylindolin-2-one of the formula:



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy and trifluoromethyl; R^1 is selected from the group consisting of lower alkyl, alkylphenyl, cycloalkyl, and aryl; and R^2 is selected from the group consisting of hydrogen, lower alkyl and benzyl, which comprises:

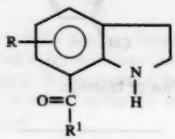
(1) acylating an indoline of the formula



where R is as defined above with a nitrile of the formula

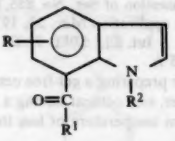
R^1CN

wherein R^1 is as defined above in the presence of boron trichloride and aluminum trichloride to produce a 7-acylindoline of the formula:



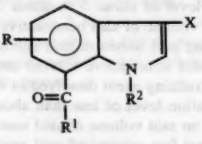
wherein R and R^1 are as defined above, with the provision that where R^2 is to be other than hydrogen the 7-acylindoline is alkylated to obtain the desired substitution on the nitrogen;

(2) dehydrogenating the 7-acylindoline obtained in step (1) to produce a 7-acylindole of the formula



wherein R, R^1 and R^2 are as defined above;

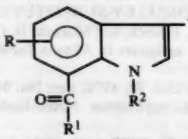
(3) halogenating the 7-acylindole obtained in step (2) to produce a 7-acyl-3-halo-indole of the formula



wherein R, R^1 and R^2 are as defined above and X is halogen; and

(4) hydrolyzing the 7-acyl-3-halo-indole obtained in step (3) with phosphoric acid to produce a 7-acylindolin-2-one.

9. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, halogen lower alkyl, lower alkoxy and trifluoromethyl, R^1 is

selected from the group consisting of lower alkyl, alkylphenyl, cycloalkyl and aryl; R^2 is selected from the group consisting of hydrogen, lower alkyl and benzyl; and Y is selected from the group consisting of hydrogen and halogen.

4,221,717

TOTAL SYNTHESIS OF THE UTERO-EVACUANT SUBSTANCE D,L-ZOAPATANOL

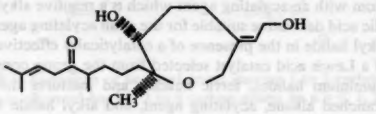
Robert H. K. Chen, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 920,433, Jun. 29, 1978. This application Mar. 23, 1979, Ser. No. 23,492

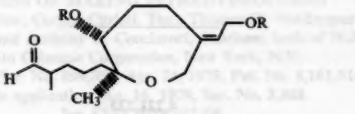
Int. Cl.² C07D 313/04

U.S. Cl. 260—333 **6 Claims**

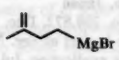
1. The process for the preparation of a compound of the formula



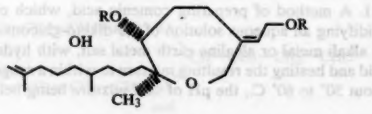
which comprises reacting a compound of the formula



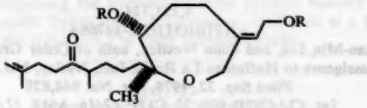
with a compound of the formula



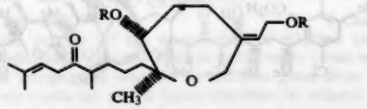
to form a compound of the formula



reacting the product formed with an oxidizing agent selected from chromium trioxide-sulfuric acid and chromium trioxidepyridine to form a ketone of the formula



isomerizing the product with rhodium (III) 2,4-pentadionate to form a compound of the formula



and hydrolyzing the ester with a base, wherein R is an acyl group having 2–5 carbon atoms.

4,221,718

PROCESS FOR PREPARING BENDIOCARB OF CRYSTALLINE FORM A

Harold G. Haynes, Foxton Royston, and Robert W. Taylor, Cambridge, both of England, assignors to Fisons Limited, London, England

Division of Ser. No. 794,651, May 6, 1977. This application May 29, 1979, Ser. No. 43,100

Claims priority, application United Kingdom, May 8, 1976, 19019/76

Int. Cl.² C07D 317/46

U.S. Cl. 260—340.5 R **26 Claims**

1. A process for preparing bendiocarb of crystalline form A, characterized by an infra red spectrum exhibiting a peak at wavelength 733 cm^{-1} and a trough at wavelength 756 cm^{-1}, which process comprises heating bendiocarb of any other crystalline form in the solid state at a temperature below its melting point.

5. A process for preparing bendiocarb of crystalline form A, characterized by an infra red spectrum exhibiting a peak at wavelength 733 cm^{-1} and a trough at wavelength 756 cm^{-1}, which process comprises solidifying molten bendiocarb.

9. A process for preparing bendiocarb of crystalline form A, characterized by an infra red spectrum exhibiting a peak at wavelength 733 cm^{-1} and a trough at wavelength 756 cm^{-1}, which process comprises holding bendiocarb of any other crystalline form at a temperature of at least 35° C. in a liquid medium of such low solubility for bendiocarb that some bendiocarb is being dissolved while other is crystallizing out of solution.

17. A process for preparing bendiocarb of which at least 85% by weight is of crystalline form A, characterized by an infra red spectrum exhibiting a peak at wavelength 733 cm^{-1} and a trough at wavelength 756 cm^{-1}, which process comprises reacting methyl isocyanate with 2,2-dimethyl-4-hydroxy-1,3-benzodioxole at a temperature of at least 35° C. in a liquid medium in which the reactants dissolve at least partially but in which bendiocarb is substantially insoluble, and maintaining the resulting bendiocarb at a temperature of at least 35° C. in contact with the liquid medium until at least 85% by weight of the bendiocarb is of crystalline form A.

4,221,719

PROCESS FOR THE PREPARATION OF ARYLGLYOXYLIC ACIDS

Helmut Fiege, Leverkusen, and Karlfried Wedemeyer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,846

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836327

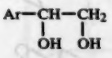
Int. Cl.² C07D 317/06; C07C 51/42

U.S. Cl. 260—340.5 R **30 Claims**

1. Process for the preparation of an arylglyoxylic acid of the formula

Ar—CO—COOH

wherein Ar is optionally substituted aryl which process comprises oxidizing the corresponding arylethane-1,2-diol of the formula

 (I),

wherein Ar is defined as above, with oxygen or a gas containing molecular oxygen in an aqueous alkaline medium, in the presence of a platinum-group metal catalyst and, as an activator, a material selected from lead, lead com-

pounds, bismuth and bismuth compounds, at a temperature of up to the boiling point of the reaction mixture.

4,221,720

THIO-BIS ALKYL LACTONE ACIDS AND ESTERS THEREOF

Stanley J. Brois, Westfield, and Antonio Gutierrez, Hamilton Square, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 806,326, Jun. 13, 1977, Pat. No. 4,167,514, which is a division of Ser. No. 726,206, Sep. 24, 1976, Pat. No. 4,062,786. This application Dec. 7, 1978, Ser. No. 967,289

Int. Cl.[2] C07D *307/10, 309/20*

U.S. Cl. 260—343.6 12 Claims

1. Thio-bis alkyl lactone acid material selected from the group consisting of carboxylic acid and C_1 to C_{10} alcohol ester thereof obtained by a reaction comprising reacting a molar proportion of a hydrocarbon-substituted C_4–C_{10} dicarboxylic acid material selected from the group consisting of dicarboxylic acid, ester and anhydrides thereof, or a mixture of said C_1 to C_{10} alcohol with said dicarboxylic acid or its anhydride, with about one-half molar proportion of S_xCl_2 wherein x is 1 to 4, at a temperature of from −20° C. to 100° C. and evolving HCl in an acid environment to thereby form said thio-bis lactone acid material.

4,221,721

2-OXABICYCLOOCTANE DERIVATIVES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 8,925, Feb. 2, 1979, Pat. No. 4,203,947, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 27, 1979, Ser. No. 52,334

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.[3] C07D *309/04*

U.S. Cl. 260—345.1 4 Claims

1. A cyclic chemical compound having a structure:

wherein R_1 is hydrogen or methyl and R_2 is C_4 or C_5 alkyl or C_3 alkenyl, said cyclic chemical compounds having a structure selected from the group consisting of:

and

4,221,722

PROCESS FOR PREPARING ALKYLPYRYLIUM SALTS

Michel Arnaud, and Christian Roussel, both of Marseilles, France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 14, 1978, Ser. No. 960,610

Claims priority, application France, Nov. 18, 1977, 77 35292

Int. Cl.[2] C07D *309/34, 213/18*

U.S. Cl. 260—345.1 19 Claims

1. A process for preparing polyalkylpyrylium salts comprising a polyalkylpyrylium cation, wherein the pyrylium nucleus is substituted by 3 to 5 alkyl substituents which are identical or different from each other and three of which are situated in the 2-, 4- and 6-position, and an anion selected from the group consisting of tetrahalogeno-aluminates, tetrahalogenoferrates and halides which comprises the step of reacting a branched alkane comprising about three carbon atoms more than are contained in the alkyl substituents in 3-, 4- and 5-position of the pyrylium cation of which atoms at least one is a tertiary carbon atom with an acylating agent which is a reactive alkyl carboxylic acid derivative suitable for use as an acylating agent and an alkyl halide in the presence of a catalytically effective amount of a Lewis acid catalyst selected from the group consisting of aluminium halides, ferric halides, and mixtures therof, said branched alkane, acylating agent, and alkyl halide being reacted in an amount sufficient and at a temperature and for a length of time sufficient to form said polyalkylpyrylium salts.

4,221,723

METHOD OF PREPARING COMENIC ACID

Shiyunichiro Oga; Kazuo Asano, both of Ibaraki, and Katsumi Imada, Kyoto, all of Japan, assignors to Daiichi Seiyaku Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 208,872, Dec. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 784,171, Dec. 16, 1968, abandoned. This application Jul. 19, 1976, Ser. No. 706,367

Int. Cl.[2] C07D *309/38*

U.S. Cl. 260—345.7 R 4 Claims

1. A method of preparing comenic acid, which comprises acidifying an aqueous solution of 2,5-diketo-gluconic acid, or its alkali metal or alkaline earth metal salt, with hydrochloric acid and heating the resulting mixture to within a range of from about 50° to 60° C., the pH of said mixture being below 0.1.

4,221,724

ANTIBIOTIC X-14766A

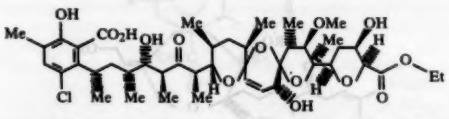
Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 22, 1978, Ser. No. 944,825

Int. Cl.[3] C07D *309/22;* C12P *17/16;* A61K *31/35*

U.S. Cl. 260—345.8 R 2 Claims

1. A compound of the formula



and the pharmaceutically acceptable salts thereof.

4,221,725

STEROID DERIVATIVES AND THEIR USE IN RADIOIMMUNOASSAYS

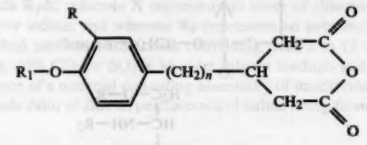
Jack Bernstein, News Brunswick; Ravi K. Varma, Belle Mead, both of N.J.; B. Richard Vogt, Yardley, Pa., and Frank L. Weisenborn, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 901,952, May 1, 1978, which is a continuation-in-part of Ser. No. 824,016, Aug. 12, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,092

Int. Cl.[2] C07D *309/06*

U.S. Cl. 260—345.8 R 7 Claims

1. A compound having the formula



wherein R is hydrogen or an alkyl group having 1 to 3 carbon atoms; R_1 is alkanoyl having 2 to 6 carbon atoms an n is 0, 1, 2, 3 or 4.

4,221,726

PROCESS OF MAKING TETRAHYDROFURAN

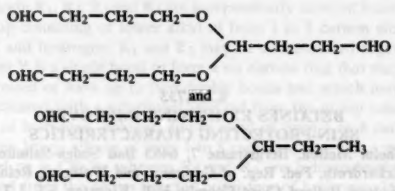
Paul D. Taylor, Corpus Christi, Tex.; Thomas H. Vanderspurt, Gillette, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 899,052, Apr. 24, 1978, Pat. No. 4,161,616. This application Jan. 16, 1979, Ser. No. 3,868

Int. Cl.[2] C07D *307/08*

U.S. Cl. 260—346.11 14 Claims

1. A process for converting acrolein into tetrahydrofuran which comprises (1) selectively hydrogenating acrolein to a product mixture consisting of at least two moles of allyl alcohol per mole of acrolein and propionaldehyde, (2) subjecting the product mixture to acidic conditions to produce acrolein diallyl acetal and propionaldehyde diallyl acetal, (3) selectively hydroformylating the acetals to form a hydroformylation product mixture of



and (4) subjecting the hydroformylation product mixture to aqueous acidic hydrolysis/hydrogenation conditions at a pH between about 0.1 and 5 to yield tetrahydrofuran.

4,221,727

ETHYLENE OXIDE RECOVERY

Albert C. Tsang, and Oliver C. Ainsworth, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 17, 1979, Ser. No. 67,580

Int. Cl.[2] C07D *301/32*

U.S. Cl. 260—348.37 9 Claims

1. In the process for the manufacture of ethylene oxide wherein ethylene is partially oxidized in the vapor phase with molecular oxygen and wherein the effluent gases from the process are contacted with a liquid absorbent to remove the ethylene oxide product, the improvement which comprises employing ethylene carbonate as the liquid absorbent for the effluent gases from the process in order to more efficiently absorb the ethylene oxide and concurrently absorb a larger quantity of carbon dioxide.

4,221,728

STABILIZED POLYCARBONATE COMPOSITIONS

Donald B. G. Jaquiss, New Harmony; Steven W. Scott, Evansville, both of Ind.; Howard A. Vaughn, Jr., Schenectady, N.Y., and Joseph B. Williams, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1977, Ser. No. 865,292

Int. Cl.[2] C08L *69/00, 83/06*

U.S. Cl. 260—37 SB 33 Claims

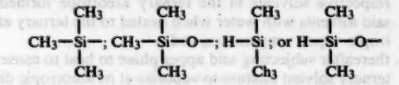
1. A thermal and oxidatively stabilized thermoplastic composition consisting essentially of in admixture (a) a high molecular weight aromatic carbonate polymer and a minor amount of (b) a chain-stopped polyorganohydrogen-siloxane comprising units selected from the group consisting of

(1) units of the formula

wherein R is a monovalent hydrocarbon radical free of aliphatic unsaturation, a is from 1.00 to 2.10, b is from 0.1 to 1.0, and the sum of a plus b is from 2.00 to 2.67;

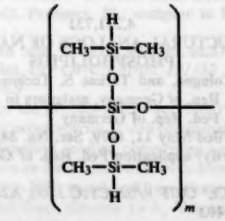
(2) units of the formula

wherein A and B are terminal units independently selected from



and n is an integer of from about 1 to about 500, and

(3) units of the formula



wherein m is equal to about 26.

4,221,729

INDOANILINES

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 482,494, Jun. 24, 1974, Pat. No. 3,977,825. This application May 28, 1976, Ser. No. 691,216
Claims priority, application Luxembourg, Jun. 22, 1973, 67859
Int. Cl.[2] C07C *119/12*
U.S. Cl. 260—396 N 13 Claims

1. N[(4'-dimethylamino)phenyl]-2-methyl-5-ureido benzoquinoneimine.

4,221,730

3-[[(4-AMINOPHENYL)SULFONYL]AMINO]-N-[DIAMINOPHOSPHINYL]-BENZAMIDE

Robert J. Alaimo; Ronald J. Storrin, and Ozra E. Millner, Jr., all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,892
Int. Cl.[2] A61K *31/63, 31/66;* C07C *143/80*
U.S. Cl. 260—397.7 R 1 Claim

1. The compound 3-[[(4-Aminophenyl)sulfonyl]amino]-N-[diaminophosphinyl]-benzamide.

4,221,731

PROCESS FOR RECOVERY OF HIGH-GRADE LECITHIN AND SOLVENTS FROM TERNARY SOLVENT SYSTEM CONTAINING CRUDE VEGETABLE OIL

Robert G. Short, and Frank T. Orthoefer, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Apr. 19, 1978, Ser. No. 897,969
Int. Cl.[2] A23J *7/00;* C07F *9/02;* C11C *3/00*
U.S. Cl. 260—403 20 Claims

1. In a solvent extraction method of extracting oil from oilseed using a ternary solvent mixture including a oleophilic hydrocarbon solvent; a lower alcohol solvent which is miscible with water and with said hydrocarbon solvent; and water; and one of the extracted materials is a full miscella containing crude oil, phosphatides and said ternary solvent mixture, the steps of:

a. separating the full miscella into an upper and lower phase, said upper phase containing: crude oil, phosphatides, hydrocarbon solvent, lower alcohol solvent, and water in which the ratio of hydrocarbon solvent to lower alcohol and lower alcohol to water both exceed the ratios of the respective solvents in the ternary azeotrope formed by said solvents with water when heated to the ternary azeotropic vapor temperature; and

b. thereafter subjecting said upper phase to heat to cause the ternary solvent mixture to vaporize at its azeotropic distillation temperature to thereby remove substantially all water from said upper phase, leaving only crude oil, phosphatides, hydrocarbon solvent, and lower alcohol solvent, whereby premature degumming of said phosphatides is avoided by first removing all water from said upper phase.

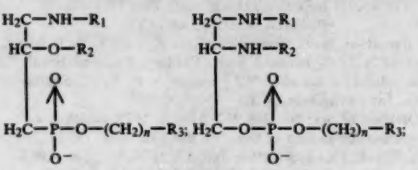
4,221,732

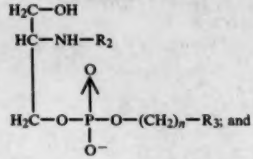
STRUCTURAL ANALOGS OF NATURAL PHOSPHOLIPIDS

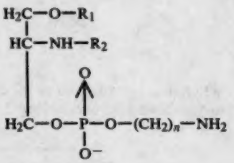
Kurt Oette, Cologne, and Tschae S. Tschung, Rodenkirchen, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,354
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820893
Int. Cl.[3] C07F *9/02;* C11C *3/00;* A23J *7/00*
U.S. Cl. 260—403 2 Claims

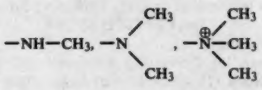
1. A structural analog of natural phospholipids selected from the group consisting of compounds of the formulae:







wherein R_1 and R_2 are either hydrogen and/or saturated or unsaturated straight-chain and branched anyl radicals with 2 to 24 C-atoms; R_3 is an amino group or a substituted amino group of the formula



and n is 1–3.

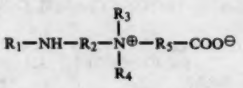
4,221,733

BETAINES EXHIBITING IMPROVED SKIN-PROTECTING CHARACTERISTICS

Wilhelm Melloh, Bergstrasse 7, 6483 Bad Soden-Salmünster, Eckardroth, Fed. Rep. of Germany, and Wolfgang Reinisch, Hedone Ballard Close Coombe Hill, Kingston KT 2 7 PG, Surrey, England

Filed Nov. 13, 1978, Ser. No. 960,273
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750731
Int. Cl.[2] C09F *5/00;* C11C *3/00;* A61K *7/06*
U.S. Cl. 260—404.5 4 Claims

1. Betaines of the formula



wherein R_1 is the acyl radical of ricinoleic acid, R_2 and R_5 are C_{1-4} alkylene radicals and R_3 and R_4 are selected from the group C_{1-4} alkyl, C_{1-3} hydroxyalkyl and hydroxypolyethoxy having from 2–20 repeating ethoxy units.

4,221,734

PROCESS FOR THE PREPARATION OF DERIVATIVES OF FLUOROALKANE-CARBOXYLIC AND PERFLUOROALKANE-SULFINIC ACIDS

Auguste Commeyras, Clapiers; Hubert Blancou, Montpellier, and André Lantz, Oullins, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Dec. 12, 1977, Ser. No. 859,912
Claims priority, application France, Dec. 17, 1976, 76 38131
Int. Cl.[2] C07C *53/22, 143/70;* C07F *3/06*
U.S. Cl. 260—408 9 Claims

1. A process for the preparation of zinc salts of perfluoroalkanecarboxylic acid and perfluoroalkanesulphinic acid which comprises reacting a perfluoroalkyl halide having the general formula R_FX, wherein X represents an atom of chlorine, bromine, or iodine, and wherein R_F represents an unbranched or branched perfluorinated chain containing from 2 to 12 carbon atoms; with CO_2 or SO_2 in an inert solvent medium and in the presence of a material consisting essentially of unactivated zinc the mole ratio of zinc to perfluoroalkyl halide being from 1:1 to 2:1.

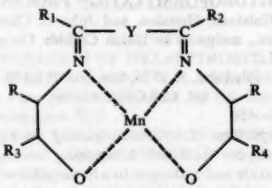
4,221,735

COMPLEXED MANGANESE CATALYST

Walter K. Olander, Clifton, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 753,501, Dec. 21, 1976, Pat. No. 4,093,596. This application Feb. 22, 1978, Ser. No. 880,134
Int. Cl.[2] C07F *13/00*
U.S. Cl. 260—429 C 12 Claims

1. A catalyst for the oxidative coupling of a phenolic monomer which consists of a compound of the formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of lower alkyl of from 1 to 8 carbon atoms, aryl and hydrogen; R_1 and R_2 may be concatenated together when Y is a single bond to form a six carbon ring that may be saturated or have up to two double bonds and which may be substituted with a substituent selected from the group consisting of hydrogen, halogen, lower alkyl of from 1 to 8 carbon atoms, lower alkoxy of from 1 to 8 carbon atoms; Y is a single bond or is CR_5R_6 wherein R_5 and R_6 are independently selected from the group selected consisting of hydrogen, lower alkyl of 1 to 8 carbon atoms and aryl; and R is hydrogen or R may be concatenated together with R_3 or R_4 to form an unsaturated ring containing 5 or 6 carbon atoms or a saturated ring containing 5 or 6 carbonatoms which may be unsubstituted or substituted with lower alkyl groups of 1 to 8 carbon atoms or aryl groups.

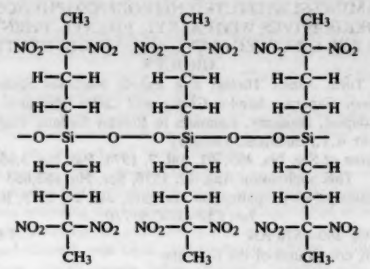
4,221,736

BIS-(3,3-DINITROBUTYL)-POLYSILOXANE

Kurt Baum, Pasadena, and Duane A. Lerdal, Sierra Madre, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,366
Int. Cl.[2] C07F *7/10*
U.S. Cl. 556—422 11 Claims

1. The compound bis(3,3-dinitrobutyl)polysiloxane represented by the structure:



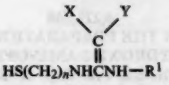
4,221,737

1-(ALKYNYL)AMINO-1-(MERCAPTOALKYL)AMINO ETHYLENES

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, DeWitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 945,966, Sep. 26, 1978. This application Feb. 1, 1979, Ser. No. 8,655
Int. Cl.[2] C07C *87/24, 121/30*
U.S. Cl. 260—465.4 13 Claims

1. A compound of the formula



wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms; X and Y are each independently hydrogen, nitro, cyano, $—SO_2Ar$ or $—COR^3$, provided that X and Y are not both hydrogen; R^3 is (lower)alkyl, Ar, (lower)alkoxy, amino or (lower)alkylamino; Ar is phenyl or phenyl containing 1 or 2 substituents independently selected from halogen and (lower)alkyl; and n is 2 or 3.

4,221,738

PRODUCTION OF ACRYLONITRILE

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 5, 1979, Ser. No. 18,371
Int. Cl.[2] C07C *120/00, 121/32*
U.S. Cl. 260—465.9 13 Claims

1. A process for the preparation of acrylonitrile which comprises contacting propionitrile at dehydrogenation conditions with a dehydrogenation catalyst comprising a nonacidic complex containing, on an elemental basis, from about 0.01 to about 2 wt. % of a Group VIII metal and from about 0.01 to about 5 wt. % of a metal from Groups IVA, VA and VIIB of the Periodic Table composited on a porous carrier material, and recovering the resultant acrylonitrile.

4,221,739

AMINO-SUBSTITUTED NITROBENZOPHENONE DERIVATIVES WITH ALKYL, PHENYL, PHENYL ALKYL OR CYCLOALKYL AMINO-SUBSTITUTING GROUPS

Edit Tóth; Jozsef Törley; Éva Pálosi; Szabólos Szeberényi; Laszlo Szporny; Sándor Görög, and Csilla Mészáros, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

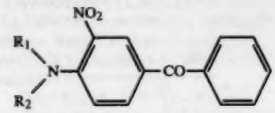
Division of Ser. No. 485,701, Jul. 3, 1974, Pat. No. 3,957,777. This application Aug. 12, 1975, Ser. No. 603,853

Claims priority, application Hungary, Jul. 26, 1973, RI 517

Int. Cl.[2] C07C *97/10*

U.S. Cl. 260—570 AB 7 Claims

1. A compound of the formula:



and pharmaceutically acceptable acid addition salts thereof, wherein

R_1 and R_2 are each a saturated or unsaturated straight or branched C_1 to C_{18} alkyl, a phenyl-C_1 to C_4 alkyl, a saturated or unsaturated C_3 to C_8 cycloalkyl, phenyl, halophenyl, C_1 to C_4 alkylphenyl, or alkoxyphenyl, with the proviso that if R_1 is methyl, R_2 is not methyl.

4,221,740

PROCESS FOR THE PREPARATION OF SERINOL (1,3-DIHYDROXY-2-AMINOPROPANE)

Heinrich Pfeiffer, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,094

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742981

Int. Cl.[2] C07C *85/11*

U.S. Cl. 260—584 R 10 Claims

1. A process for preparing 1,3-dihydroxy-2-aminopropane consisting essentially of catalytically hydrogenating the sodium salt of 1,3-dihydroxy-2-nitropropane.

4,221,741

PREPARATION OF 4(6'-METHOXY-2'-NAPHTHYL)BUTAN-2-ONE

Laramie M. Gaster, Sawbridgeworth, England, assignor to Beecham Group Limited, Great Britain

Filed Jan. 19, 1979, Ser. No. 4,888

Claims priority, application United Kingdom, Jan. 27, 1978, 03481/78

Int. Cl.[2] C07C *45/00, 49/84*

U.S. Cl. 568—314 6 Claims

1. A process for the preparation of 4-(6'-methoxy-2'-naphthyl)-butan-2-one which comprises catalytic hydrogenation of 4-(6'-methoxy-2'-naphthyl)-4-hydroxy-but-en-2-one over a palladium catalyst at a hydrogen pressure of 0.5 to 1.5 atmospheres.

4,221,742

COUPLING REACTION INVOLVING A GRIGNARD AND ALLYLIC HALIDE

Carlos G. Cardenas, and Zia U. Din, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 786,973, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,273, Jul. 16, 1975, abandoned, Ser. No. 596,426, Jul. 16, 1975, abandoned, Ser. No. 596,274, Jul. 16, 1975, abandoned, and Ser. No. 596,361, Jul. 16, 1975, abandoned. This application Dec. 29, 1977, Ser. No. 865,718

Int. Cl.[3] C07C *45/45*

U.S. Cl. 568—393 19 Claims

1. A process for the synthesis of phytone from alpha- or beta-methylheptenone and a linear C_{10} aliphatic compound having an alkyl or alkenyl radical R comprising the steps of;

(a) halogenating said alpha- or beta-methylheptenone to produce an allylic halide having a halogen allylic to a terminal olefinic site;

(b) forming the Grignard reagent RMgX of said C_{10} aliphatic compound, X being halogen;

(c) preparing a reaction mixture comprising said Grignard reagent and said allylic halide; Claim 29 (amended), continued;

(d) removing from said reaction mixture a C_{18} reaction product in which coupling of the Grignard reagent and allylic halide occurs by displacement by R of the Grignard reagent at the terminal olefinic site of the allylic halide accompanied by double bond migration and loss of halide; and

(e) hydrogenating the reaction product of step (d).

4,221,743

HYDROFORMYLATION PROCESS

Robert W. Halstead, Houston, and John C. Chaty, Seabrook, both of Tex., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 7, 1976, Ser. No. 703,130

Int. Cl.[2] C07C *45/08*

U.S. Cl. 568—454 1 Claim

1. In the process of hydroformylating an alpha-olefin to produce aldehydes therefrom comprising feeding said olefin, carbon monoxide and hydrogen to a homogeneous liquid phase composition, containing a catalytic amount of rhodium carbonyl complexed with a triarylphosphine present in an amount greater than that amount which complexes with said rhodium carbonyl, an amount of condensation products of said aldehydes, preferably a substantial amount, and said aldehydes, wherein the rate of production of said process in said liquid phase composition can decrease, wherein the improvement which comprises feeding a sufficient amount of oxygen to said liquid phase composition during hydroformylation to maintain a desired aldehyde productivity.

4,221,744

HYDROFORMYLATION PROCESS EMPLOYING RHODIUM-BASED CATALYSTS COMPRISING LIGANDS HAVING ELECTRONEGATIVE SUBSTITUENTS

Jerry D. Unruh, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 822,859, Aug. 8, 1977, Pat. No. 4,152,344. This application Dec. 1, 1978, Ser. No. 965,680

Int. Cl.[2] C07C *45/10*

U.S. Cl. 568—454 17 Claims

1. In the hydroformylation of an ethylenically unsaturated compound having from 2 to about 25 carbon atoms and free of substituent atoms other than oxygen and nitrogen with hydrogen and carbon monoxide in a liquid-phase reaction zone to produce an aldehyde derivative of said ethylenically-unsaturated compound, said hydroformylation being conducted in the presence of rhodium in complex combination

with ligands comprising carbon monoxide and an additional organic ligand at a temperature of from about 50° C. to about 200° C. under a combined partial pressure of hydrogen and carbon monoxide of at least about one atmosphere and with the ratio of hydrogen partial pressure to that of carbon monoxide being from about 10:1 to about 1:10, the improvement which comprises:

employing as said additional organic ligand a compound having two phosphino moieties, one being of the formula:

and the other being of the formula:

wherein R_1, R_2, R_1', and R_2' are organic radicals selected from alicyclic, aliphatic, and aromatic groups of which at least one is substituted with at least one electronegative substituent moiety which is separated from the phosphorus atom by not more than six carbon atoms, said substituent moiety being in the meta or the para position when the substituted organic radical is phenyl, but only in the meta position when the substituted organic radical is phenyl and the substituent moiety is an alkoxy or hydroxyl group.

4,221,745

PREPARATION OF HEXANITROSTILBENE

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1979, Ser. No. 20,881
Int. Cl.³ C07C 79/10
U.S. Cl. 568—931 **10 Claims**

1. A process for producing 2,2', 4,4', 6,6'-hexanitrostilbene (HNS) which comprises reacting 2,2', 4,4', 6,6'-hexanitrobibenzyl (HNBB) with a copper ammino compound in a solvent.

4,221,746

PPEPARATION OF HEXANITROSTILBENE

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1979, Ser. No. 20,889
Int. Cl.³ C07C 79/10
U.S. Cl. 568—931 **16 Claims**

1. A process for producing 2,2',4,4',6,6'-hexanitrostilbene (HNS) which comprises reacting 2,2',4,4',6,6'-hexanitrobibenzly (HNBB) with a halogenating agent in the presence of a base in a liquid solvent or suspending agent which is inert to the reaction.

4,221,747

CARBURETOR

William H. Edmonston, 25408 North Via la Brada, Valencia, Calif. 91355

Filed Jul. 26, 1978, Ser. No. 928,292
Int. Cl.² F02M 9/06
U.S. Cl. 261—44 B **10 Claims**

1. A carburetor, comprising:

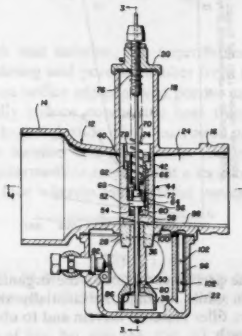
a body having an inlet end, an outlet end, and a throat extending therethrough from said inlet end to said outlet end,

a fuel supply tube secured to the underside of said body and having an outlet in communication with said throat,

a throttle slide member movably mounted on the body intermediate said inlet and outlet ends thereof for substantially transverse movement across said throat to vary the unblocked portion thereof, and

a metering rod secured to said throttle slide member and extending downwardly into said fuel supply tube to control the flow of fuel therethrough,

said throttle slide member comprising a substantially vertical bore therethrough and means for adjusting the position of said metering rod in a substantially longitudinal direction, said metering rod comprising a head portion at the upper end thereof, said head portion being slidable within said bore, spring means being disposed between said head portion and the bottom of said bore, and said adjusting means comprising an adjusting member movably mounted on said throttle member and disposed in the portion of said bore above said head portion of said metering rod, said adjusting member having a lower end in engagement with



said head portion, whereby movement of said adjusting member in said bore effects movement of said metering rod in a substantially longitudinal direction.

9. A carburetor, comprising:

a body having an inlet end, an outlet end, and a throat extending therethrough from said inlet end to said outlet end,

a fuel supply tube secured to the underside of said body and having an outlet in communication with said throat,

a throttle slide member movably mounted on the body intermediate said inlet and outlet ends thereof for substantially transverse movement across said throat to vary the unblocked portion thereof, and

a metering rod secured to said throttle slide member and extending downwardly into said fuel supply tube to control the flow of fuel therethrough, said metering rod comprising a plurality of transverse bores extending therethrough to create more direct airflow over said fuel supply tube outlet, said metering rod having a downwardly and inwardly tapered, substantially flat portion on the outlet side thereof.

4,221,748

METHOD FOR MAKING POROUS, CRUSHABLE CORE HAVING A POROUS INTEGRAL OUTER BARRIER LAYER HAVING A DENSITY GRADIENT THEREIN

Wayne D. Pasco, Ballston Spa, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

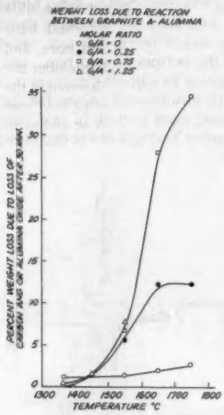
Filed Jan. 25, 1979, Ser. No. 6,278
Int. Cl.² B22D 29/00; B29H 7/20
U.S. Cl. 264—43 **18 Claims**

1. A method for simultaneously forming a porous integral

barrier layer having a density gradient across its thickness on all external surfaces of a fired ceramic article and for increasing the porosity content and the crushability characteristics of the interior portion thereby including the process steps of

(a) preparing a material composition consisting essentially of an organic binder, a reactant fugitive filler material and an alumina flour, the particle size of the alumina flour and the reactant fugitive filler material is less than about 300 microns, and the binder comprises less than 50 percent by volume;

(b) working a portion of the material composition to produce a preform of a predetermined shape;



(c) heating the preform to remove the organic binder from the preform while retaining substantially all of the reactant fugitive filler material therein and to obtain a desired green strength;

(d) firing the preform in a controlled atmosphere to react the alumina and the reactant fugitive filler material to produce at least one or more suboxides of alumina to produce a ceramic article having a predetermined continuous porosity content, grain morphology, and crushability characteristics, and

(e) oxidizing at least a portion of the suboxides of alumina to form a porous integral barrier layer of alumina at the surface of the ceramic article, the layer having a density gradient across its thickness.

4,221,749

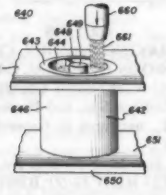
METHOD OF MAKING A BODY OF ROOTING MEDIA

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Naperville, Ill.

Continuation of Ser. No. 712,393, Aug. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 474,269, May 29, 1974, Pat. No. 3,973,353. This application Jul. 28, 1978, Ser. No. 928,789

Int. Cl.[2] B29D *27/04*

U.S. Cl. 264—45.3 **10 Claims**



1. A method of making a body of rooting media comprising the steps of providing a mold open at the upper end and having a closure at the lower end thereof, applying a non-phytotoxic release layer to the inner surfaces of said mold, forming a mixture of soil-like materials in water, adding foam-forming precursors of a thermosetting resin to said mixture to form a slurry which upon curing provides a resilient open-celled hydrophilic polymer, pouring said slurry into said mold and permitting said resin to cure until the body of rooting media is cohesive, and thereafter removing the resultant body of rooting media from said mold.

4,221,750

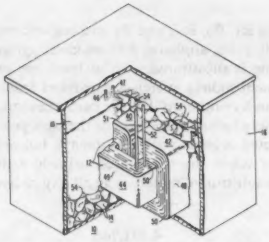
METHOD OF CURING PHENOLIC RESIN IN AN ELECTRICAL APPARATUS WITHOUT DEGRADING POLYETHYLENETEREPHTHALATE INSULATION ALSO IN THE ELECTRICAL APPARATUS

Gerhard R. Sprengling, Derry Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,406

Int. Cl.[2] B29C *6/02*

U.S. Cl. 264—71 **10 Claims**



1. A method of curing phenolic resin near polyethyleneterephthalate, where the polyethyleneterephthalate has exposed areas subject to degradation by vaporous materials, comprises removing free phenol from the phenolic resin and heating the phenolic resin to a cured state.

3. A method of curing phenolic novolac resin contained in an electrical apparatus where polyethyleneterephthalate film is used in an insulating capacity in the apparatus, and has exposed areas subject to vapor absorption and degradation by vaporous materials, and where the phenolic novolac resin contains free phenol subject to being vaporized; comprising the steps of: (1) positioning said apparatus in an air permeable case having a known void volume, said apparatus containing polyethyleneterephthalate insulation with an exposed surface area subject to vapor absorption, (2) removing free phenol from the phenolic novolac resin, and (3) heating the apparatus containing the phenolic novolac resin at a temperature of between about 145° C. to about 180° C., for up to 8 hours, to cure the phenolic novolac resin without degrading the polyethyleneterephthalate.

4,221,751

ARTICLES MOLDED FROM PAPERMILL SLUDGE

Bruce A. Haataja, Lake Linden, and Anders E. Lund, Houghton, both of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Mar. 7, 1979, Ser. No. 18,121

Int. Cl.[2] B29J *5/00*

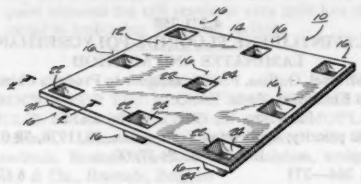
U.S. Cl. 264—119 **15 Claims**

1. A method for molding an article comprising the steps of:

(a) admixing a resinous particle board binder with a dried comminuted papermill sludge and a fibrous reinforcement material;

(b) depositing a loosely-felted mat formed from said mixture on one open part of a mold including two separable parts

defining a mold chamber having the shape of the article; and



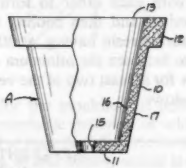
(c) closing the mold and applying sufficient heat and pressure on said mat to compress it to the substantially desired shape and size of the article and to bond the particles together.

4,221,752

PLANT RECEPTACLE AND METHOD OF PRODUCING SAME

James W. Bray, Wadsworth, Ohio, assignor to Shells, Inc., Wadsworth, Ohio

Filed Mar. 3, 1977, Ser. No. 773,904
Int. Cl.[2] B29C *5/02, 5/06*
U.S. Cl. 264—121 **5 Claims**



1. A method for making a sand molded flower pot characterized by smooth inside and outside surfaces, and a permeability of about 60 to 160 comprising the steps of providing a resin-coated sand mix prepared by hot coating, said sand mix comprising a sand having a fineness from about 55 to about 120 AFS and thermosetting resin in an amount of from 2% to 6% by weight of the sand, blowing said mix under pressure into a closed, heated mold having complementary male and female surfaces spaced apart a predetermined distance to define the inner and outer surfaces of the molded flowerpot, blowing said mix into the mold under a pressure sufficient to produce a molded density of about 100 lbs. per cu. ft., allowing said mix to at least partially set while in contact with said mold surfaces, and removing the molded flowerpot from the mold.

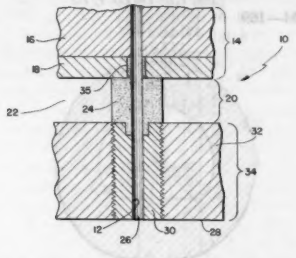
4,221,753

EXTRUSION PROCESS

Christopher G. Bradbury, Rumford, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Dec. 27, 1977, Ser. No. 865,015
Int. Cl.[3] B28B *11/16*
U.S. Cl. 264—142 **3 Claims**

1. In the method of extruding thermoplastic material comprising, heating said material to make it fluid, conveying said material into an extrusion die having a plurality of extrusion orifices, each said orifice including initial, intermediate and final zones wherein said zones are disposed respectively adjacent each other, said final zone terminating in an exit opening for said material in an outer die face, forcing said material into the initial zone of said orifices and thereafter out of the final zones thereof and thus out of said die in a rod or strand-like form having a solidified outer wall structure surrounding a more fluid core of said material at a higher temperature, directing a liquid coolant under pressure into said intermediate zone of said extrusion orifice downstream from said initial zone and upstream of said final zone to contact the outer surface of said material passing therethrough while at least partially vaporizing said coolant to simultaneously form said solidified outer wall structure and to provide a lubricating film between the inner wall of said orifice and said material to facilitate passage of said material therethrough, wherein a porous member is disposed in said intermediate zone and said liquid coolant is



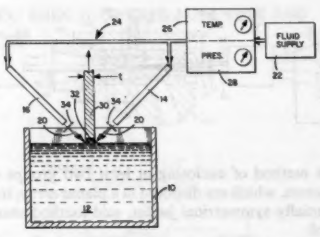
forced through said member; the improvement comprising, thermally insulating said porous member from the initial zone of said extrusion orifice adjacent said porous member so as to at least partially reduce conductive heat transfer from said liquid coolant to that portion of said extrusion orifice upstream of said porous member and disposed in said initial zone and adjacent said intermediate zone, and at a location remote from said outer die face wherein said material leaves the die.

4,221,754

METHOD FOR PRODUCING SOLID RIBBONS

Welville B. Nowak, 17 Furbush Ave., West Newton, Mass. 02165

Continuation of Ser. No. 660,244, Feb. 23, 1976, abandoned.
This application Dec. 29, 1977, Ser. No. 865,618
Int. Cl.[2] C04B *35/60*
U.S. Cl. 264—164 **11 Claims**



1. A method for producing a solid ribbon of a material from a liquid phase with said solid ribbon having a generally rectangular, transverse cross-section, said method comprising the steps of:

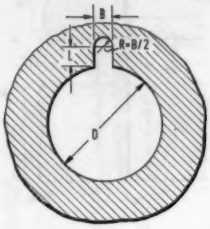
a. producing a liquid phase of the ribbon material;
b. forming from the liquid phase a liquid ribbon of said material;
c. shaping the liquid ribbon to form a generally rectangular, transverse cross-section therein by directing fluid streams against the opposite sides of the liquid ribbon;
d. forming a freezing interface in the liquid ribbon above the location of the liquid ribbon shaping; and
e. withdrawing the freshly frozen ribbon so that steps b, c, and d occur continuously on new material until a desired length of solid ribbon is produced.

4,221,755

PROCESS FOR THE MANUFACTURE OF SYNTHETIC FILAMENTS HAVING A CIRCULAR CROSS-SECTION

Herbert Wellenhofer, and Hans-Otmar Stahl, both of Bobingen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,556
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732265
Int. Cl.[2] D01D *1/10*
U.S. Cl. 264—169 4 Claims



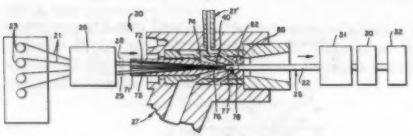
1. A process for the manufacture of synthetic filaments having a circular cross-section by melt-spinning from spinneret openings having a circular cross-section, wherein these spinneret openings having the diameter D are provided with lateral arms distributed over their circumference which end in the area of the circle at an about right angle.

4,221,756

METHODS OF ENCLOSING A PLURALITY OF CONDUCTORS IN A PARTITIONED JACKET

George F. Piper, Baltimore; William C. Vesperman, Bel Air, and Max K. Wilson, Cockeysville, all of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sep. 15, 1978, Ser. No. 943,425
Int. Cl.[2] B29F *3/10*
U.S. Cl. 264—174 5 Claims



1. A method of enclosing at least two groups of insulated conductors, which are disposed in a planar array, in a common, substantially symmetrical jacket, said method comprising the steps of:

moving at least two groups of relatively flexible, individually insulated conductors, which are disposed in a planar array, in adjacent paths along at least an exit portion of which the groups are spaced apart a predetermined distance;

moving the groups of conductors from said exit portion along converging paths in which each group is capable of being moved laterally within said array; while

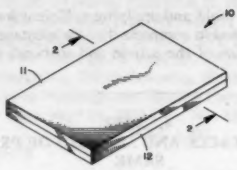
flowing a plastic material about the array to enclose it in a jacket with portions of the plastic material being flowed between the groups of conductors to achieve an equilibration of pressure in the plastic material about each group, which controls lateral movement of the groups within the array as they are being enclosed in the jacket, and to form a web, which is integral with the jacket and which may vary along the length of the array to compensate for conductor size variations, said web which separates the groups in the jacketed array having a thickness which is substantially less than said predetermined distance.

4,221,757

POLYVINYLIDENE FLUORIDE-POLYURETHANE LAMINATES AND METHOD

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 15, 1979, Ser. No. 3,633
Claims priority, application France, Jan. 20, 1978, 78 01590
Int. Cl.[3] B32B *31/00*
U.S. Cl. 264—171 6 Claims



1. The method of making a shaped laminate comprising a polyvinylidene fluoride resin adhered to a thermoplastic polyurethane resin without any intermediate bonding agent comprising the steps of bringing fluid streams of said resins into intimate contact with each other to form by extrusion the laminate shape desired and then cooling said laminate; said polyvinylidene fluoride resin having, at 200° C., an apparent viscosity, in poises, between the minimum and maximum values set forth below for at least two of the velocity gradients, in sec^{-1}, set forth below:

	APPARENT VISCOSITY VALUES	
VELOCITY GRADIENT	Minimum	Maximum
3.54	30×10^3	200×10^3
11.81	18×10^3	93×10^3
35.4	11×10^3	47×10^3
118	6.5×10^3	21×10^3
354	3.9×10^3	10×10^3
1181	2.3×10^3	4.5×10^3

4,221,758

METHOD OF EMBOSSING WOOD GRAIN PATTERNS

David J. Burkey, Millersville, and Lawrence Clark, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 1, 1978, Ser. No. 938,823
Int. Cl.[2] B29C *17/00, 1/02*
U.S. Cl. 264—225 1 Claim

1. A method of embossing a wood composition board surface having a paint coating thereon comprising the steps of:

(a) forming a mirror image of the pattern to be embossed on a metal embossing plate, said pattern being a wood grain pattern with embossing lines of 1–10 mils in width and 1–10 mils in height above the embossing plate valleys;

(b) embossing the surface of the paint coated wood composition board with the metal embossing plate, said plate being heated to about 300°–500° F., said embossing being done with a pressure of about 1,500 pounds per square inch applied for 1–5 seconds; and

(c) the improvement comprising:

(1) positioning a plastic sheet with a thickness of 0.5–1.5 mils between said paint coated composition board surface to be embossed and said metal embossing plate during the embossing step, whereby the absence of the plastic sheet will result in the removal of some of the

paint coating from the board surface when the embossing plate is removed from the board surface after embossing, and the presence of the plastic sheet prevents paint removal but still results in very little loss of grain detail in embossing the wood surface.

4,221,759

PROCESS FOR THE PRODUCTION OF HOLLOW ARTICLES FROM PREFORMS OF A THERMOPLASTIC

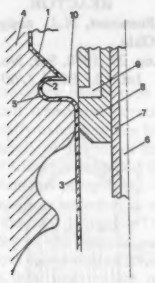
Guy Hubert, Lasne-Chapelle-Saint-Lambert, and Philippe Ghyselinck, Braine-l'Alleud, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Dec. 4, 1978, Ser. No. 965,887

Claims priority, application France, Dec. 5, 1977, 77 36798

Int. Cl.[2] B29C *17/07*

U.S. Cl. 264—520 **10 Claims**



1. In a process for the moulding of hollow articles from preforms of a thermoplastic material, of which one open end has a neck moulded at least partially into its definitive shape, in which the moulding of said hollow article is effected by blowing by means of an expansion fluid introduced into the preforms, enclosed in a mould, through a blowing nozzle which enters the interior of the preforms through their open end to be spaced from the moulded part of the neck of the preforms so as to create a region at the interior of the preforms between the nozzle and the moulded part of the neck of the preforms, said region extending to the open end of the preforms, the improvement comprising: during the introduction of the blowing nozzle, isolating the region at the interior of the preforms between the nozzle and the moulded part of the neck of the preforms from the remainder of the interior of the preforms, and cooling said isolated region by introducing cooling fluid into said isolated region through said blowing nozzle and removing the cooling fluid through an annular orifice delimited by the open end of said preforms and by said blowing nozzle to thereby sweep said isolated region with the cooling fluid.

4,221,760

METHOD OF MAKING, FILLING AND CLOSING CONTAINERS OF THERMOPLASTIC MATERIAL

Reinhold Mnilk, Wambel; Manfred Kurreck, Bochum-Weitmar; Ulrich Geltenpoth, Wickede, and Manfred Keil, Dortmund, all of Fed. Rep. of Germany, assignors to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany

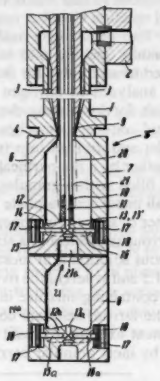
Filed Jan. 9, 1975, Ser. No. 540,035

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1974, 2400850

Int. Cl.[2] B29C *17/07*

U.S. Cl. 264—524 **1 Claim**

1. A method of making, filling and closing containers of thermoplastic material, comprising the steps of extruding an increment of a thermoplastic tube from an orifice in vertical direction; forming said increment by blow-molding to the shape of a semi-finished first container, and filling the same; extruding another increment of said tube, while moving said semi-finished container in said direction by a distance corresponding substantially to the length of said other increment but maintaining a connecting passage between the latter and said first container; shaping said other increment by blow-molding to the shape of a semi-finished second container while simultaneously completing the blow-molding of said first container to its finished shape, said shaping step comprising inserting conduit means for inlet and discharge of compressed air from said second container into said neck region of said first container; sealing said containers from one another, including removing said conduit means and closing said passage; and filling said second container.



4,221,761

DEVICE FOR THE QUANTITATIVE REDUCTION OF NITROGEN DIOXIDE IN GAS MIXTURES

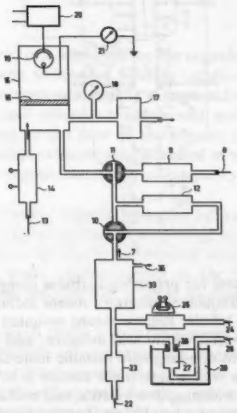
Valere G. J. Bullens; Hermanus Pauw, and Rudy A. Falkenburg, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1978, Ser. No. 920,064

Claims priority, application Netherlands, Jul. 14, 1977, 7707839

Int. Cl.[2] G01N *31/00*; C01B *21/24*; C09K *3/00*

U.S. Cl. 422—54 **1 Claim**



1. In an apparatus for simultaneously determining the amounts of nitrogen monoxide and nitrogen dioxide in air by means of an apparatus comprising an ozonizer suitable for

supplying a continuous stream of ozone, a reaction chamber positioned to receive ozone from said ozonizer and air containing nitrogen oxide or air free of nitrogen oxide and containing a photomultiplier for measuring the luminescence emmission of the reaction between nitrogen monoxide and ozone, a conduit connecting said ozonizer to said reaction chamber for transferring said ozone to said reaction chamber, a gas conduit opening into said reaction chamber containing a valve suitable for admitting air free of nitrogen oxide or air to be analyzed through said conduit opening into said reaction chamber, a reducer connected to said valve for reducing nitrogen dioxide in the air to be analyzed to nitrogen monoxide and a valve by-passing conduit for by-passing the reducer, the improvement wherein said reducer comprises a container having an inlet and an outlet and divided into two compartments separated from each other by a gas-permeable partition, one of said compartments is filled with a granular mixture of ferrous sulphate and an alkali metal acid sulphate in a molar ratio of from 3:1 to 1:1, the other of said compartment is filled with a granular mixture of ferrous sulphate and a strong acid, the pK value of which in aqueous solution is at most 4, in a molecular ratio between 1:1 and 1:5 and wherein the overall weight ratio of the ferrous sulphate containing mixture in the first compartment with respect to the ferrous sulphate containing mixture in the second compartment exceeds 1:2, said mixtures being respectively supported by inert granular carrier material.

4,221,762

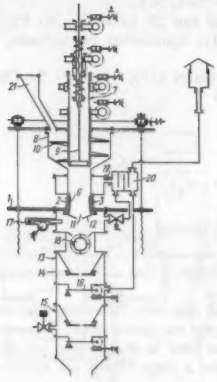
APPARATUS FOR PREPARING CARBIDES

Alexandr I. Andrjushin, naberezhnaya M. Gorkogo, 4/22, korpus B, kv. 198; Sergei A. Kuznetsov; Nikolai P. Galkin; Jury N. Tumanov, poselok Moskvorechie, 113, kv. 61; Boris A. Kiselev, Vorobievskoe shosse, 13, kv. 50; Ion B. Sorkin, Scherbakovskaya ulitsa, 35, kv. 9; Vladimir I. Dobrovolsky, Proletarsky prospekt, 57, kv. 18, and Jury P. Butylkin, prospekt Kalinina, 10/2, kv. 13, all of Moscow, U.S.S.R.

Continuation of Ser. No. 683,510, May 5, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,494

Int. Cl.[2] B01J *4/00, 17/00;* **C01B** *31/36;* **H05B** *9/02*

U.S. Cl. 422—186 **8 Claims**



1. An apparatus for preparing carbides comprising a frame means; a high-frequency generator means including an inductor; an upright tubular reactor means mounted on said frame means and disposed within said inductor, said reactor means being made from non-magnetic metallic material; said reactor means having a wall whose inner surface is in the form of a truncated cone widening downwards, said wall being provided with slots therein of a height less than the height of the wall; dielectric material means filling said slots; a loading means coaxially attached to a top portion of said tubular reactor means for supplying material to said reactor means, said loading means including compacting means for compacting the material supplied to said reactor means by applying pressure thereto, said tubular reactor means having a discharge opening at the lower end thereof; spring-loaded valve means at said discharge opening resiliently closing said opening and yieldably resisting the pressure applied by the compacting means to the material in the reactor means; a receptacle means attached to the lower portion of said tubular reactor means; and means for separating carbide formed in the reactor and discharged under the pressure of the compacting means from the materials in the reactor means, the separated carbide falling into the receptacle means.

4,221,763

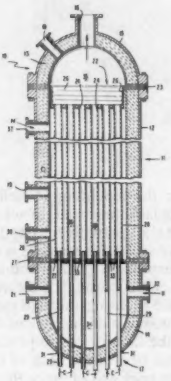
MULTI TUBE HIGH PRESSURE, HIGH TEMPERATURE REACTOR

Marvin I. Greene, Somerset, N.J., assignor to Cities Service Company, Tulsa, Okla.

Filed Aug. 29, 1978, Ser. No. 937,891

Int. Cl.[2] B01J *3/00*

U.S. Cl. 422—197 **1 Claim**

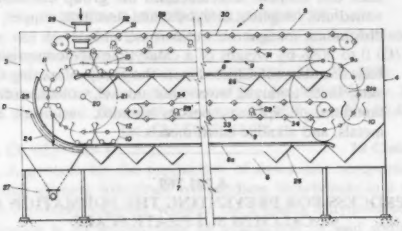


1. A reactor device comprising a generally cylindrical body having opposed ends, each end of said body being closed by separable hemispherical caps, said body and caps defining a pressure shell having an inlet end and a discharge end, a refractory liner in areal contact with the interior of the pressure shell, a plurality or nest of reactor tubes, an expandable tube sheet secured to the pressure shell at the discharge end for supporting one end of said plurality or nest of reactor tubes, a second tube sheet fixed to the shell at the inlet end for supporting the opposite ends of said tubes, injector tubes mating with each reactor tube projecting through the pressure shell at the inlet end and making a fluid tight connection with mating tubes and the pressure shell, conduit means providing an inlet and an outlet to and from the pressure shell to provide for circulation of heat transfer material within the pressure shell between the tube sheets and around and about the exterior of the tubes, a second conduit means communicating with the refractory liner to provide for the introduction of inert gases permeating the refractory liner to block undesireable gaseous mediums to and from the refractory, a reaction material inlet communicating with the interior of the inlet cap and communicating with the interior of each reaction tube through said second tube sheet whereby reaction material, introduced into the tubes, will react with other reaction material, introduced through said injector tubes with the result that products of the reaction are advanced through the tube nest and are discharged from the reactor outlet.

4,221,764
HORIZONTAL EXTRACTOR

Arthur F. Saxon, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1978, Ser. No. 969,986
Int. Cl.[3] B01D *11/02*; B65G *47/19, 47/40*
U.S. Cl. 422—268 7 Claims



1. Apparatus of the traveling basket type wherein a succession of uniformly spaced transverse percolating baskets are moved along a horizontally extending run beneath a discharge means disposed transversely of the line of travel of the baskets for charging a slurry of solid particles and liquid material into the baskets, the improvements comprising:

(a) said discharge means is arranged to discharge material continuously into the path of travel of the full end-to-end length of the interior of the baskets moving beneath it;

(b) there is a continuous succession of transversely extending stream splitters at least coextensive in length with the interior of the baskets movable with the baskets between said discharge means and the baskets;

(c) said stream splitters being positioned to move in a path above the baskets with a splitter covering the space between each two baskets and shaped to divert the flow of material from the discharge means across the space between two adjacent baskets from the leading to the following basket;

(d) fixed tray means below the baskets at least coextensive with the width of the interior of the baskets arranged to receive from the slurry the liquid extract that drains through the baskets; and

(e) means for moving the succession of baskets and stream splitters in isochronism over the tray means with the stream splitters traveling with the trays in operative relation through the entire length in which means for feeding the slurry and any additional means for supplying liquid from above the baskets into the baskets are provided.

4,221,765
PURIFICATION OF NICKEL CHLORIDE SOLUTIONS

Gustavo A. Meyer; Mark A. Peters, both of Arvada, and Helen S. Leaver, Pine, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,782
Int. Cl.[2] C01G *53/08*
U.S. Cl. 423—24 65 Claims

1. In a solvent extraction process for removing impurities from an aqueous nickel chloride acid solution containing about 50 gpl to 320 gpl Ni, optionally at least about 1 gpl Co, and at least the impurities copper and iron selected from the group consisting of copper, iron and zinc, the improvement which comprises,

providing said solution having a free hydrochloric acid concentration of about 0.2 N to 4 N and a total chloride content of about 4 to 11 N and in which sufficient amount of the iron is in the ferrous state such that the redox potential of the solution is at a value substantially less than 600 mv referenced to the Standard Calomel Electrode to maintain the copper in the extractable form,

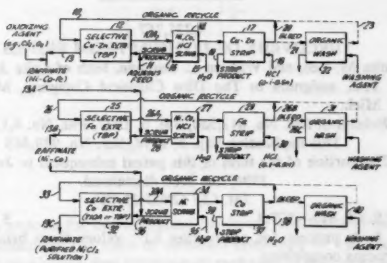
mixing said solution with an organic extractant of essentially about 5% to 70% by volume of tributyl phosphate dissolved in a water-immiscible organic solvent at a selected organic to aqueous solution volume ratio predetermined to extract substantially said copper from said aqueous solution and form a raffinate containing said nickel and said ferrous iron and a loaded organic containing said copper,

and then separating said loaded organic from said raffinate to provide a nickel chloride raffinate solution substantially impoverished in said copper impurity and containing ferrous iron.

32. In a continuous solvent extraction process for purifying an aqueous nickel chloride-hydrochloric acid feed solution containing about 50 to 320 gpl Ni, optionally at least about 1 gpl Co, and at least one impurity selected from the group consisting of copper, iron and zinc, the improvement which comprises,

providing said feed solution having a free hydrochloric acid concentration ranging from about 0.2 N to 4 N and a total chloride concentration ranging from about 4 to 11 N,

subjecting said solution to mixing in a series of solvent extraction multiple stages with an organic extractant of essentially about 5% to 70% by volume of tributyl phos-



phate dissolved in a water-immiscible organic solvent at a selected organic to aqueous solution volume ratio predetermined to extract substantially at least said one impurity by flowing said solution through said multiple stages countercurrent to the flow of the organic extractant to produce a nickel raffinate impoverished in said impurity and a loaded organic containing said impurity and residual nickel,

separating said loaded organic from said raffinate,

subjecting said loaded organic to multi-stage scrubbing with water to remove selectively said residual nickel present by mixing said water countercurrent to the flow of said loaded organic and provide a scrub product containing said nickel,

combining the scrub product with the aqueous feed solution fed to said multiple solvent extraction stages,

stripping said scrubbed organic of said at least one impurity with dilute hydrochloric acid flowing countercurrently to the flow of said organic through a series of multiple stripping stages,

subjecting said stripped organic to a cleaning operation, and

recycling the cleaned organic to said multiple solvent extraction stages.

4,221,766

MINIMIZING SOLUBLE IRON CONCENTRATION IN A PLANT EFFLUENT

Wilfred A. Pabst, Hightstown, N.J., and David Crabbe, St. Louis, Mo., assignors to Cities Service Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 619,718, Oct. 6, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,645

Int. Cl.[2] C01G *49/02*

U.S. Cl. 423—140 3 Claims

1. In a plant producing pigmentary iron oxide by the Penniman-Zoph scrap iron process, where the material found at the conclusion of the process comprises residual scrap iron and a slurry comprising iron oxide and dissolved iron in an aqueous component,

the improvement which comprises

a method of minimizing the soluble iron concentration in the plant effluent, comprising the steps of

(a) separating said residual scrap iron from said aqueous slurry,

(b) neutralizing the slurry in a controlled manner by adding a neutralizing agent chosen from the group consisting of ammonium hydroxide and the oxides, hydoxides, and carbonates of sodium and potassium, so that the pH of the slurry is maintained between about 3.0 and 4.0 during the bulk of the neutralization and then is allowed to rise to a range of about 4.0 to about 5.0 as the Fe^{++} concentration is depleted, and

(c) aerating the slurry during the controlled neutralization, thus forming additional iron oxide of marketable quality from the soluble iron component.

4,221,767

RECOVERY OF LITHIUM FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 812,534, Jul. 5, 1977, Pat. No. 4,116,856. This application Sep. 5, 1978, Ser. No. 939,545

The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.

Int. Cl.[2] C01D *15/00*

U.S. Cl. 423—179.5 5 Claims

4. A process for recovering Li^+ values from brine, said process comprising

1. providing a particulate anion exchange resin having suspended therein a microcrystalline $LiX{\cdot}2Al(OH)_3$ structure, where X is a halogen, which has had a portion of the LiX removed by elution,

2. contacting a Li^+-containing brine with said resin, thereby enriching said resin with Li^+ values from said brine, and

3. separating said resin, now enriched with Li^+ values, from said brine,

wherein the particulate anion exchange resin having suspended therein a microcrystalline $LiX{\cdot}2Al(OH)_3$ structure is one in which microcrystalline $LiOH{\cdot}2Al(OH)_3$, suspended in said resin, has been converted to $LiX{\cdot}2Al(OH)_3$.

4,221,768

CATALYST FOR PURIFYING EXHAUST AND WASTE GASES

Akira Inoue, Minoo; Takehiko Suzuki, Ibaraki; Koichi Saito; Yukio Aoki, both of Suita; Tetsuji Ono, Amagasaki, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 784,463, Apr. 4, 1977, abandoned. This application Apr. 28, 1978, Ser. No. 901,109

Claims priority, application Japan, Apr. 8, 1976, 51-38712

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—239 15 Claims

1. A process for the selective removal of nitrogen oxides from oxides from exhaust and waste gases containing nitrogen oxides, which comprises contacting the exhaust and waste gases with ammonia at a temperature of from about 150° C. to about 500° C. in the presence of a catalyst which consists essentially of

(A) 30 to 99% by weight of at least one solid acid selected from the group consisting of a binary oxide consisting of titanium, silicon and oxygen and a ternary oxide consisting of titanium, zirconium, silicon and oxygen

(B) 1 to 70% by weight of a catalytic oxide comprising at least one element selected from the group consisting of vanadium, tungsten, molybdenum, uranium, copper, iron, chromium, manganese and cerium, and

(C) 0 to 50% by weight of a catalytic oxide comprising at least one element selected from the group consisting of tin, zinc, lead, titanium, zirconium, nickel, cobalt, niobium, tantalum, phosphorus, boron, bismuth, antimony, alkali metals, and alkaline earth metals.

4,221,769

PROCESS FOR PREVENTING THE FORMATION OF CALCIUM SULPHATE SCALE

Douglas C. Harper, Ipswich; Norman Robinson, Felixstowe, and Stanislaw M. Janikowski, Grimsby, all of England, assignors to Fisons Limited, London, England

Continuation of Ser. No. 651,113, Jan. 21, 1976, abandoned, which is a continuation of Ser. No. 409,366, Oct. 25, 1973, Pat. No. 3,972,981. This application Feb. 28, 1979, Ser. No. 16,142

Claims priority, application United Kingdom, Nov. 8, 1972, 51454/72

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

Int. Cl.[2] C01B *25/16;* C01F *1/00*

U.S. Cl. 423—320 10 Claims

1. In a process for producing a phosphoric acid by the wet process in which a slurry of calcium sulphate hemihydrate crystals in phosphoric acid is produced, which slurry is filtered on a filter and then washed with a liquor in a number of stages, said liquor being circulated from one wash stage to the preceding wash stage, the improvement which comprises incorporating 0.0005 to 0.2% by weight of an anti-scaling additive based on the weight of the liquor into the liquor between the point at which it is separated from the crystals and the point at which it is collected for circulating back to the crystals, the additive being selected from the group consisting of a C_8 to C_{16} alkylbenzene sulphonic acid and on alkali-metal or ammonium salt thereof; a mono- or di- C_8 to C_{18} alkyl sulphate ester and an alkali - metal or ammonium salt thereof, a condensate of ethylene or propylene oxide with octyl or nonyl phenol or with a C_8 to C_{14} alcohol, a sulphate ester of such a condensate and an alkali-metal or ammonium salt of such a sulphate ester; a polyacrylamide flocculating agent; and mixtures thereof and wherein the wash liquor is such that it contains less than 30% by weight of P_2O_5 therein.

4,221,770

AMMONIUM NITRATE PARTICULATE ABATEMENT PROCESS

Michael T. Chapman, Columbus, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,192

Int. Cl.[2] C01C *1/18*

U.S. Cl. 423—396 2 Claims

1. In a process for removing particulate ammonium nitrate from the steam aerosol effluent from a reactor in which nitric acid is neutralized with ammonia, wherein said steam aerosol effluent is scrubbed with a water spray to produce suspended droplets of aqueous ammonium nitrate solution and said droplets are then removed from the effluent by passage through a fibrous mat, the improvement consisting of passing said effluent stream containing liquid droplets through a mat consisting of fibers of average diameter between 5 and 20 microns which have the following composition by weight: between 40 and 50 percent alumina, from 45 to 55 percent silica, less than 6 per-

cent zirconia, less than 1.5 percent B_2O_3 and less than one percent trace amounts of other inorganics.

4,221,771

PREPARATION OF DAWSONITE

Peter van der Heem, Perryville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 007,287, Jan. 29, 1979, abandoned, which is a continuation of Ser. No. 899,630, Apr. 24, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,623

Int. Cl.[2] C01B *31/24*

U.S. Cl. 423—419 P 10 Claims

1. A process for the production of dawsonite comprising: reacting alumina trihydrate with sodium bicarbonate in a sodium carbonate solution, wherein the alumina trihydrate concentration is no greater than 86 grams/liter of said sodium carbonate solution, wherein the sodium bicarbonate is added in sufficient amount to react with all of the alumina trihydrate according to the equation:

$$2Al(OH)_3+2NaHCO_3=Na_2O{:}Al_2O_3{:}2CO_2{:}2\text{-}H_2O+2H_2O$$

but is less than 150 grams/liter, wherein the sodium carbonate concentration is from 150 to 300 grams/liter, and the reaction is at between 100° and 200° C. for from 30 minutes to 4 hours at above atmospheric pressure.

4,221,772

CARBON BLACK FOR LACQUERS AND PIGMENTS

Edith Eisenmenger, Offenbach; Gerhard Kühner, Hanau; Lothar Rothbühr, Hürth-Hermülheim, and Hans Schäfer, Linsengericht, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jan. 4, 1978, Ser. No. 867,182

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700940

Int. Cl.[2] C01B *31/00, 31/02;* C04B *31/02*

U.S. Cl. 423—445 4 Claims

1. A carbon black outstandingly suited as a black resisting flushing out in pigmented lacquers and for the production of low viscosity and storage stable pigmented pastes prepared by a process comprising oxidizing with nitrogen dioxide a furnace black having the following properties

Primary particle size	nm	35–120
BET surface area	m^2/g	10–50
Iodine adsorption	mg/g	10–55

said carbon black having the following properties:

Primary particle size	nm	35–120
BET surface area	m^2/g	10–50
Iodine adsorption	mg/g	10–55
Volatile/content	%	2–8
pH value		3–6
Acidity	ml n/10 acid per 100 grams of carbon black	2–16
DBP number	ml/100 grams	40–140

4,221,773

METHOD OF PRODUCING A CARBON DIAPHRAGM FOR AN ACOUSTIC INSTRUMENT

Tsunehiro Tsukagoshi; Teruo Toma; Shinichi Yokozeki, and Toshikazu Yoshino, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 968,912

Claims priority, application Japan, Dec. 23, 1977, 52-154315

Int. Cl.[3] C01B *31/02;* G10K *13/00*

U.S. Cl. 423—445 22 Claims

1. A method of producing a diaphragm of an acoustic instrument comprising the steps of blending and kneading scale-like graphite powder and a thermoplastic resin with each other, rolling the resulting blend into a plate form to orient the graphite, making the plate form infusible by baking the form, and carbonizing the rolled blend, thereby producing a diaphragm which is substantially distortion-free and has a high specific modulus of elasticity.

4,221,774

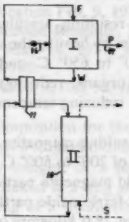
ISOTOPE ENRICHMENT SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, New Rochelle, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,171

Int. Cl.[2] C01B *5/00*

U.S. Cl. 423—580 14 Claims



1. A process for concentrating the heavy isotope of at least one element of the class of elements consisting of hydrogen and oxygen by the dual temperature exchange of the heavy and light isotopes of said at least one element between two separable fluids containing said element, one of said fluids being in gaseous phase and the other being in liquid phase, which comprises providing the said liquid phase as a solution consisting essentially

(a) in minor molar proportion, of water, and

(b) in major molar proportion, of material selected from the class consisting of the water miscible organic hydroxy and/or carboxy compounds which have a ratio of carbon atoms to their alcoholic and acidic hydroxyl groups not greater than 2.

4,221,775

METHOD OF PRODUCING POROUS LITHIUM OXIDE

James N. Anno, Cincinnati, and Howard H. Boeing, Cleves, both of Ohio, assignors to Research Dynamics, Inc., Cincinnati, Ohio

Filed Dec. 26, 1978, Ser. No. 973,085

Int. Cl.[2] C01D *1/02*

U.S. Cl. 423—641 12 Claims

1. A method of producing porous lithium oxide, comprising the steps of heating lithium hydroxide above the melting point of anhydrous lithium hydroxide in an atmosphere inert thereto, cooling the molten lithium hydroxide to a temperature below its melting point in said atmosphere, subjecting the cooled lithium hydroxide to reduced pressure not exceeding about 2 microns of mercury, and heating said lithium hydroxide to a temperature of about 150° C. to about 200° C. under said re-

duced pressure, thereby obtaining lithium oxide having an average pore spacing not greater than about 20 microns.

12. Porous lithium oxide microspheres of about 100 microns in diameter having an average pore spacing not greater than about 10 microns.

4,221,776

MANUFACTURE OF ACICULAR FERRIMAGNETIC IRON OXIDES

Horst Autzen, Freinsheim; Helmut Jakusch; Eberhard Koester, both of Frankenthal; Werner Loeser, Ludwigshafen; Peter Rudolf, Neuhofen; Wilhelm Sarnecki, Limburgerhof, and Werner Steck, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,528

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805621

Int. Cl.[2] C01G *49/06*

U.S. Cl. 423—634 **2 Claims**

1. A process for the manufacture of acicular ferrimagnetic iron oxide which comprises:

(a) Heating acicular particles of synthetic lepidocrocite or a mixture of lepidocrocite and goethite containing at least 60% lepidocrocite in air or in an inert gas atmosphere and at a temperature in the range of 450° to 600° C. for a time sufficient to produce acicular particles having a surface area, measured by the BET method, of from 10 to 20 m^2/g;

(b) Reducing the resulting acicular particles to acicular magnetite particles by heating the same at a temperature in the range of 450° to 650° C. under an inert gas and in contact with an organic reducing compound which decomposes at said reducing temperature in the presence of iron oxide; and

(c) oxidizing the resulting magnetite particles at a temperature in the range of 200° to 500° C. and in the presence of air to convert said magnetite particles into acicular ferrimagnetic gamma-ferric oxide particles having a coercive force greater than 28.0 kiloamps/m, measured at a field strength of 100 kiloamps/m and a tap density of 1.2 g/cm^3.

2. A process for the manufacture of acicular ferrimagnetic iron oxide which comprises:

(a) Heating acicular particles of synthetic lepidocrocite or a mixture of lepidocrocite and goethite containing at least 60% lepidocrocite in air or in an inert gas atmosphere and at a temperature in the range of 450° to 600° C. for a time sufficient to produce acicular particles having a surface area, measured by the BET method, of from 10 to 20 m^2/g; and

(b) converting the resulting particles to acicular ferrimagnetic gamma-ferric oxide particles having a coercive force greater than 28.0 kiloamps/m, measured at a field strength of 100 kiloamps/m and a tap density of 1.2 g/cm^3, by heating said particles in air, at a temperature below about 500° C. and in contact with an organic reducing compound which decomposes at said temperature.

4,221,777

METHOD FOR PREPARING A PANCREATIC GLUCAGON SPECIFIC ANTIBODY

Tomoyoshi Nishino, Tokushima, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

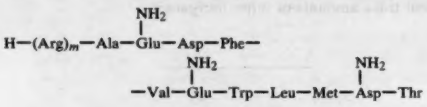
Division of Ser. No. 876,799, Feb. 10, 1978. This application Jul. 13, 1978, Ser. No. 924,319

Claims priority, application Japan, Feb. 10, 1977, 52-13919

Int. Cl.[2] C07G *7/00;* **C07C** *103/52;* **G01N** *23/00, 33/00*

U.S. Cl. 424—12 **7 Claims**

1. A method for preparing a pancreatic glucagon specific antibody which comprises administering as an antigen a peptide-protein complex of a peptide represented by the formula (I):



(I)

wherein m is 0 or 1, linked to a protein carrier which is equine serum albumin, bovine serum albumin, rabbit serum albumin, human serum albumin, equine serum globulin, bovine serum globulin, rabbit serum globulin or human serum globulin by a dialdehyde represented by the general formula (II):

(II)

wherein n is an integer of 1 to 5 to a mammal to produce an antibody and recovering the resulting pancreatic glucagon specific antibody.

4,221,778

PROLONGED RELEASE PHARMACEUTICAL PREPARATIONS

Yegnaswami Raghunathan, Fairport, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 800,105, May 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 745,325, Nov. 26, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,644

Int. Cl.[2] A61K *47/00, 9/22, 9/30, 31/74*

U.S. Cl. 424—31 **8 Claims**

1. A pharmaceutical preparation comprising ion exchange resin particles having a pharmacologically active drug absorbed thereon to form drug-resin complex particles, which resin particles have been treated in an amount sufficient to retard their rate of swelling in water with an impregnating agent selected from the group consisting of polyethylene glycol, propylene glycol, mannitol, lactose and methylcellulose, and which treated particles have been subsequently coated with a water-permeable diffusion barrier.

4,221,779

PHARMACEUTICAL COMPOSITION FOR TREATING TROPICAL DISEASES

Neil B. Graham, 6 Kilmardinny Grove, Bearsden, Dunbartonshire, England

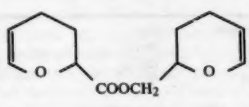
Filed Jun. 28, 1978, Ser. No. 920,056

Claims priority, application United Kingdom, Jun. 28, 1977, 26918/77

Int. Cl.[2] A61K *31/74, 47/00*

U.S. Cl. 424—78 **10 Claims**

1. A pharmaceutical composition comprising therapeutically effective amount of a drug which is an organic compound containing a nitrogen atom and which is effective against a tropical disease, in admixture with a polymeric matrix of a copolymer of the compound of Formula I:



(I)

with at least one comonomer having more than one functional group selected from the group consisting of hydroxyl and carboxyl groups, said polymeric matrix being biodegradable in the body.

4,221,780

METHOD FOR PRODUCING HIGH POTENCY FACTOR VIII

Joseph H. Cort, 300 E. 54 St., New York, N.Y. 10022

Filed Dec. 4, 1978, Ser. No. 966,038
Int. Cl.[2] A61K *35/14;* C07G *7/00*
U.S. Cl. 424—101 5 Claims

1. In a method for producing a Factor VIII preparation comprising collecting blood from a donor, separating the plasma therefrom, and recovering a Factor VIII-rich fraction from said plasma, the improvement of administering to said donor 1-deamino-8-D-arginine vasopressin in an amount effective to increase the circulating level of Factor VIII in the blood of said donor and thereafter recovering blood containing said increased levels of Factor VIII.

4,221,781

SYNERGISTIC PENICILLIN-CEPHALOSPORIN COMPOSITIONS AND METHODS

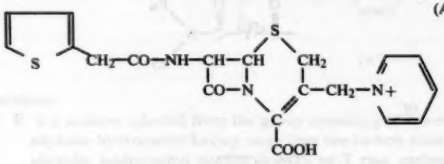
Peter Bamberg, Zürich, Switzerland; Bertil A. Ekström, Södertälje, Sweden; Ulf E. Forsgren, Södertälje, Sweden, and Berndt O. H. Sjöberg, Södertälje, Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Division of Ser. No. 464,157, Apr. 25, 1974, which is a continuation-in-part of Ser. No. 302,423, Oct. 31, 1972, abandoned. This application Feb. 7, 1978, Ser. No. 875,799
Claims priority, application United Kingdom, Nov. 1, 1971, 50675/71
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—114 10 Claims

10. A method for the treatment of bacterial disease which comprises administering to a mammal, including man, suffering from such disease, a composition comprising a mixture of:

(a) a cephalosporin of the formula

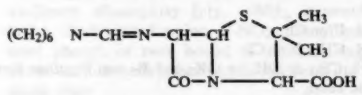
(A)



or pharmaceutically acceptable salts thereof (A); and

(b) a penicillin of the formula

(B)



or pharmaceutically acceptable salts or pharmaceutically acceptable in vivo hydrolyzed esters thereof (B) selected from the group consisting of acyloxy-alkyl esters and alkyloxycarbonyloxy-alkyl esters; said composition containing the compounds of the formulas A and B in a weight ratio ranging from 10:1 to 1:10.

4,221,782

FISH CULTURE BY STICKLEBACK POPULATION ERADICATION

Craig MacPhee, Moscow, Id., and Fred F. Cheng, Taipei, Taiwan, assignors to Idaho Research Foundation, Inc., Moscow, Id.

Filed Apr. 3, 1978, Ser. No. 893,061
Int. Cl.[3] A01N *47/08, 55/00, 59/00*
U.S. Cl. 424—127 9 Claims

1. A method of fish culture for control of the stickleback population in an aqueous habitat containing stickleback and at least one member selected from the group comprising sockeye salmon, chinook salmon, steelhead trout, rainbow trout, cutthroat trout, suckers, dace, shiners and sculpin, said method comprising:

adding to the aqueous habitat a compound containing the azide radical and which dissociates or hydrolyzes to form a concentration of free azide radical in water from about 0.325 to 3.25 mg/l which is lethal to the stickleback, but not lethal to said selected members of said group.

4,221,783

COMPOSITION AND METHOD FOR THE TREATMENT OF DUODENAL ULCERS, GASTRITIS AND GASTRO-DUODENITIS

Ioan Puscas, Simleul Silvaniei; Ioan Orban, Jud Salaj; Livia Voicu, Simleul Silvaniei; Dorin Breazu, Cluj-Napoca; Ioan Pop, Cluj-Napoca; Iuliu Ciupe, Cluj-Napoca; Lazar Terec, Gherla; Mioara R. Butan, Cluj-Napoca; Aurel Chiu, Simleul Silvaniei; Aurel Lerintiu, Simleul Silvaniei, and Zoltan Turi, Simleul Silvaniei, all of Romania, assignors to Centrala Industriala de Medicamente Cosmetice Coloranti si Lacuri, Bucharest, Romania

Continuation-in-part of Ser. No. 906,202, May 15, 1978, abandoned. This application Feb. 9, 1979, Ser. No. 10,906
Claims priority, application Romania, May 14, 1977, 90347; May 14, 1977, 90349; May 14, 1977, 90350; May 14, 1977, 90351; Apr. 13, 1978, 93790
Int. Cl.[2] A61K *33/00, 33/10, 33/08*
U.S. Cl. 424—127 13 Claims

1. Pharmaceutical composition for the treatment of gastro-duodenal ulcers, gastritis and gastro-duodenitis comprising

(a) from 5–40%, by weight, of a sulfonamide having an $-SO_2NH_2$ group linked to a ring structure selected from the group consisting of a thiadiazolic ring and a benzothiazolic ring,

(b) from 15–30%, by weight, of an alkali metal bicarbonate selected from the group consisting of the bicarbonates of sodium and potassium,

(c) from 10–40%, by weight, of an alkali metal citrate selected from the group consisting of the citrates of sodium and potassium,

(d) from 15–30%, by weight, of a magnesium compound selected from the group consisting of magnesium carbonate and magnesium oxide, and

(e) from 0–15%, by weight, of aluminum hydroxide.

4,221,784

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING LECITHIN

John H. Growdon, Brookline, and Richard J. Wurtman, Waban, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 847,967, Nov. 2, 1977. This application Apr. 5, 1979, Ser. No. 27,209
Int. Cl.[2] A61K *31/685*
U.S. Cl. 424—199 2 Claims

1. The process of improving memory impairment associated with inadequate cholinergic transmission in a human afflicted with memory impairment which comprises administering to the human an amount of lecithin effective to release adequate amounts of brain acetylcholine to improve said memory impairment.

4,221,785

ANTI-INFLAMMATORY AND ANTI-ULCER COMPOUNDS AND PROCESS

John R. J. Sorenson, 1167 Hollywood Ave., Cincinnati, Ohio 45224

Division of Ser. No. 563,778, Mar. 31, 1975, abandoned. This application May 30, 1978, Ser. No. 910,421

Int. Cl.[2] A61K *31/60*

U.S. Cl. 424—230 **7 Claims**

1. A method for treating gastrointestinal ulcers in an animal body comprising:

administering to said animal body, orally or parenterally, a copper coordination compound having anti-ulcergenic properties produced by reacting a copper salt with an aromatic carboxylic acid or alkaline earth salt thereof selected from the grou consisting of 3,5-diisopropylsalicylic acid, acetylsalicylic acid and salicylic acid and alkaline earth salts thereof, the amount of said copper coordination compound administered to said animal body being about 2.0 to 165 mg per kilogram of body weight.

4,221,786

NOVEL HALOGENOPREGNADIENES AND PROCESS FOR THE MANUFACTURE THEREOF

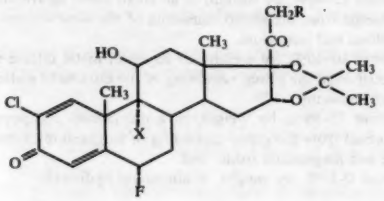
Jaroslav Kalvoda, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 767,196, Feb. 9, 1977, abandoned. This application Jun. 20, 1978, Ser. No. 917,236

Int. Cl.[2] A61K *31/58*

U.S. Cl. 424—241 **6 Claims**

1. A method of treating topical inflammations in warm-blooded animals, which comprises the topical administration of an antiinflammatory effective amount of a pharmaceutical preparation containing a polyhalogenated pregnane derivative of the formula



(I),

wherein X represents a fluorine or chlorine atom and R represents a hydroxyl group, a chlorine atom or a hydroxyl group esterified with an acid suitable for esterification of hydroxysteroids useful in antiinflammatory therapy, together with a topically acceptable pharmaceutical carrier.

4,221,787

ESTERAMIDE PRODRUGS OF ANTI-INFLAMMATORY CORTICOSTEROIDS

Nicholas S. Bodor, Gainesville, Fla., and Kenneth B. Sloan, Eudora, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

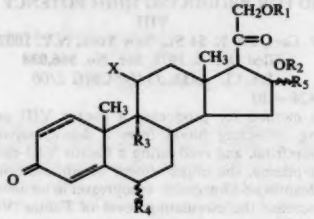
Continuation-in-part of Ser. No. 891,050, Mar. 28, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,380

Claims priority, application Australia, Mar. 28, 1979, 45483/79.

Int. Cl.[2] C07J *17/00, 5/00;* **A61K** *31/58*

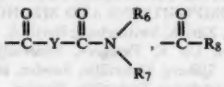
U.S. Cl. 424—241 **86 Claims**

1. A compound having the structural formula:

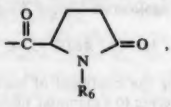


wherein

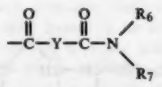
R_1 and R_2, which can be the same or different, are each H,



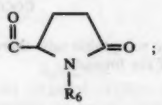
or



with the proviso that at least one of R_1 and R_2 is



or

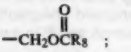


R_3 is H, F or Cl;

R_4 is H, CH_3, F or Cl;

R_5 is H, CH_3 or OH; or OR_2 and R_5 can together form a cyclic ketal;

R_6 and R_7, which can be the same or different, are each H, C_1–C_8 alkyl or



or R_6 and R_7, together with the nitrogen atom from which they both depend, can form a 5- or 6-membered N-heterocycle or a 5- or 6-membered N,O-heterocycle;

R_8 is C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_7 cycloalkyl, phenyl, (C_1–C_4 alkyl substituted)phenyl or C_1–C_{20} alkyl-C_6–C_{10} aryl;

X is OH or =O;

Y is $-(CH_2)_n$, wherein n ranges from 1 to 8, $-(CH_2)_m$ Z $-(CH_2)_n$, wherein both n and m range from 1 to 8, C_3–C_7 cycloalkyl or phenyl;

Z is O or S; and

the dotted line indicates the optional presence of a 1,2-double bond.

86. A method for alleviating inflammation in or on a warm-blooded animal exhibiting an inflammatory response, which comprises administering thereto an anti-inflammatory effective amount of a compound as defined by claim 1.

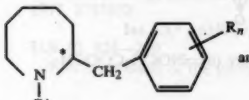
4,221,788

2-(OPTIONALLY-SUBSTITUTED)BENZYLPERHYDROAZEPINES FOR ANALGESIA AND LOWERING BLOOD PRESSURE

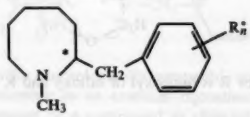
Klaus Eistetter, Constance, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,453
Claims priority, application Luxembourg, Apr. 29, 1977, 229
Int. Cl.[2] C07D *223/04;* A61K *31/395*
U.S. Cl. 424—244 47 Claims

1. A compound which, in free-base form, is one of the formulae:



and



(A')

(A")

wherein

R' is a member selected from the group consisting of lower aliphatic hydrocarbyl having more than one carbon atom, alicyclic hydrocarbyl having from 3 to 7 ring carbon atoms, optionally-substituted monoar (lower) alkyl and cycloalkyl(lower)alkyl; each

R° is, independently, a member selected from the group consisting of halo, lower alkyl, —OH, lower alkoxy, [lower]lower alkanoyloxy [c]y, —NH_2, monosubstituted amino, disubstituted amino, —NO_2, phenyl and substituted phenyl; or two, bound to adjacent ring carbon atoms, are jointly alkylenedioxy having from 1 to 4 carbon atoms; each

R is —H, one of the independent meanings of R° or, together with another R, bound to an adjacent ring carbon atom, alkylenedioxy having from 1 to 4 carbon atoms;

n is a positive whole number of at most 4;

wherein ar(lower)alkyl is aryl-substituted lower alkyl wherein the aryl is a substituted or unsubstituted monovalent unsaturated aromatic carbocyclic radical having a single ring or two or three condensed rings having a total of at most 12 ring members, each aromatic ring having from 5 to 7 ring members; and wherein any substituent bound to an aromatic carbon atom is a member selected from the group consisting of halo, lower alkyl, —OH, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, —NH_2, monosubstituted amino, disubstituted amino, —NO_2, and phenyl; any substituent bound to an aliphatic carbon atom of an araliphatic radical is a member selected from the group consisting of —OH and oxo; and any substituent of monosubstituted or of disubstituted amino is, independently, a member selected from the group consisting of alkanoyl having from 2 to 5 carbon atoms and lower alkyl.

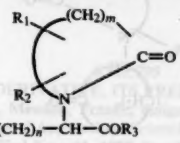
4,221,789

LACTAM-N-ACETIC ACIDS AND THEIR AMIDES

Ludovic Rodriguez, Brussels, and Lucien Marchal, Lillois, both of Belgium, assignors to UCB, Societe Anonyme, Belgium

Filed May 7, 1979, Ser. No. 36,987
Claims priority, application United Kingdom, May 8, 1978, 18160/78
Int. Cl.[2] A61K *31/395;* C07D *207/12, 223/10, 401/06*
U.S. Cl. 424—244 18 Claims

1. A lactam-N-acetic acid or an amide thereof having the formula



(I)

wherein

R_1 and R_2 independently represents a hydrogen atom, a straight or branched chain alkyl radical containing 1 to 4 carbon atoms, an unsubstituted aryl radical or an aryl radical being substituted by halogen,

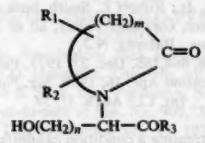
R_3 is a hydroxyl group or an $-NR_4R_5$ group, wherein each of R_4 and R_5, taken separately, represents a hydrogen atom, a straight or branched chain alkyl radical containing 1 to 4 carbon atoms, a cycloalkyl or an aralkyl radical, or R_4 and R_5, taken together with the nitrogen atom to which they are attached, form a heterocylic radical containing at most 7 ring members, selected from the group consisting of alkyleneimino, oxa-alkyleneimino, aza-alkyleneimino and N-benzyl-aza-alkyleneimino radicals,

m is 3, 4 or 5 and

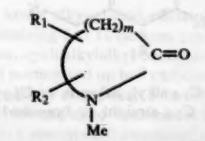
n is 0, 1 or 2;

or a pharmaceutically acceptable salt of the said lactam-N-acetic acid.

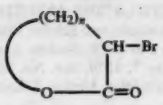
13. A process for the preparation of a lactam-N-acetic acid having the formula



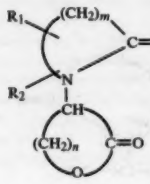
wherein R_1 and R_2 independently represents a hydrogen atom, a straight or branched chain alkyl radical containing 1 to 4 carbon atoms, an unsubstituted aryl radical or an aryl radical being substituted by halogen, R_3 is a hydroxyl group, n is 1 or 2 and m is 3, 4 or 5, which comprises reacting, in an inert solvent, an alkali metal derivative of a lactam of the formula



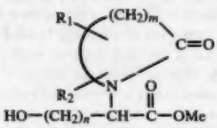
wherein R_1, R_2 and m have the meanings given above and Me is an alkali metal, with an alpha-bromolactone of the formula



wherein n has the meaning given above, subjecting the resulting lactone of an alpha-(hydroxyalkyl)-lactam-N-acetic acid of the formula



wherein R_1, R_2, m and n have the meanings given above, to hydrolysis by means of an alkali metal hydroxide, and liberating the free acid by acidification from the resulting alkali metal salt of an alpha-(hydroxyalkyl)-lactam-N-acetic acid of the formula



wherein R_1, R_2, m and n have the meanings given above and Me represents an alkali metal.

17. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claim 1 and a pharmaceutically acceptable solid or liquid diluent or carrier therefor.

4,221,790

SUBSTITUTED 2,2-DIOXO-1,2,3-BENZOXATHIAZINES

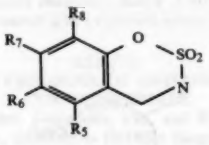
Edward J. Cragoe, Jr.; Robert L. Smith, both of Lansdale, and Gerald E. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 864,185, Dec. 27, 1977, Pat. No. 4,166,177. This application Apr. 16, 1979, Ser. No. 30,409

Int. Cl.[2] A61K *31/54*

U.S. Cl. 424—246 **10 Claims**

1. A method of treating a condition exhibiting at least one of the symptoms of pain, fever and inflammation, which comprises the administration to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



R_5 is hydrogen; C_{1-3} alkyl; halogen; or C_{1-3} alkoxy;

R_6 is hydrogen; C_{1-5} straight or branched chain alky; or halogen;

R_7 is hydrogen; C_{1-5} alkyl; C_{1-5} alkoxy; or halogen;

R_8 is hydrogen; halogen; trifluoromethyl; or C_{1-3} alkythio; and

the dashed line between the 3- and 4- positions describes alternative saturation or unsaturation.

4,221,791

SUBSTITUTED QUINOXALINE DIOXIDES

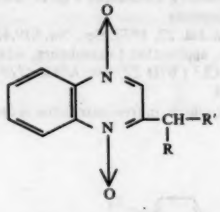
Vernon V. Young; Robert D. Williams, and Richard E. Ivy, all of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 21, 1979, Ser. No. 40,835

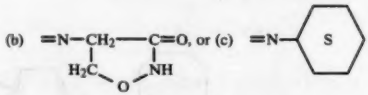
Int. Cl.[3] A61K *31/495;* **C07D** *241/52*

U.S. Cl. 424—248.4 **16 Claims**

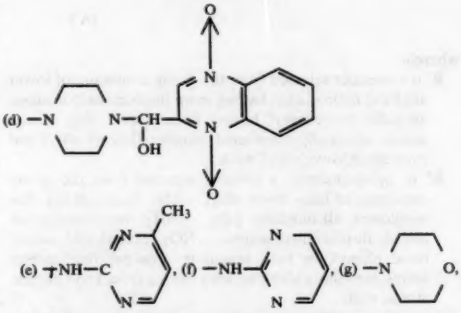
1. A compound represented by the formula



where R and R′ collectively are (a)=$NOCH_2COOCH_3$,



or R is hydroxyl or ethoxy and R′ is



(h)—NHOH, or (i)—$NHNHCO_2CH_3$.

13. A method of increasing the growth rate of animals comprising orally administering to the animal a compound of claim 1.

4,221,792

COMPOSITION ACTIVE AGAINST *PYRICULARIA ORYZAE*

Hendrik Dolman, and Johannes Kuipers, both of Weesp, Netherlands, assignors to Duphar International Research, B.V., Weesp, Netherlands

Filed Oct. 18, 1978, Ser. No. 952,376

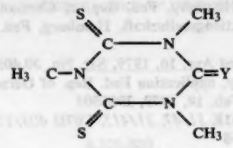
Claims priority, application Netherlands, Nov. 4, 1977, 7712169

Int. Cl.[2] A01N *9/00, 9/22;* **C07D** *265/00, 273/00*

U.S. Cl. 424—249 **7 Claims**

1. A composition active against *Pyricularia oryzae* on rice,

said composition comprising a fungicidally effective amount of a compound of the general formula



wherein Y is sulphur or imino and a liquid or finely divided solid carrier.

4,221,793

N,N'-DISUBSTITUTED PIPERAZINE DERIVATIVE

Rolf-Ortwin Weber, Wiesbaden-Naurod; Klaus Perrey, Langenfeld, and Wolfrad von Rechenberg, Ludwigshafen-Oggersheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

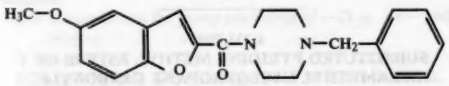
Filed Dec. 21, 1978, Ser. No. 972,068

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757532

Int. Cl.[2] A61K *31/495;* **C07D** *405/06*

U.S. Cl. 424—250 **2 Claims**

1. A compound of the formula



or its acid addition salt with a physiologically compatible acid.

2. A composition containing as an essential ingredient a therapeutically active amount of a compound as claimed in claim 1 wherein the therapeutically active amount of the compound as claimed in claim 1 is in the form of a dosage unit in an amount between 10 and 100 mg.

4,221,794

METHOD OF IMPARTING IMMUNOMODULATING AND ANTIVIRAL ACTIVITY

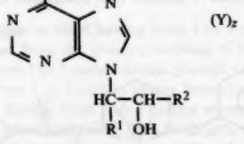
Lionel N. Simon, Santa Ana, Calif., and John W. Hadden, New York, N.Y., assignors to Newport Pharmaceuticals International, Inc., Calif. and Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Division of Ser. No. 942,802, Sep. 15, 1978. This application Jun. 21, 1979, Ser. No. 50,785

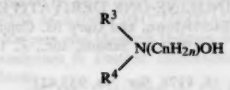
Int. Cl.[3] A01N *43/90*

U.S. Cl. 424—253 **93 Claims**

1. A method of imparting immunomodulating activity, antiviral activity or anti-leukemic activity comprising administering to a mammal an effective amount for such purpose of a compound of the formula



where X is OH, NH_2, SH, OR or SR (where R is alkyl of 1 to 4 carbon atoms or benzyl), R^1 is H or alkyl of 1 to 8 carbon atoms, R^2 is H or methyl, Y is the salt of an amine of the formula



where R^3 and R^4 are lower alkyl, n is an integer from 2 to 4 and where z is 0 or a number from 1 to 10 with a pharmaceutically acceptable acid.

4,221,795

PYRIDINE DERIVATIVE, ITS PREPARATION AND USE

Alain Beguin, Meudon, France, assignor to Societe Civile de Recherches et d'Applications Scientifiques, France

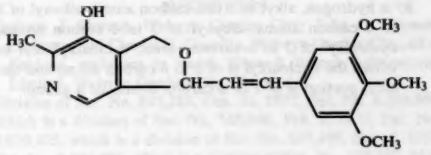
Filed Nov. 24, 1978, Ser. No. 963,383

Claims priority, application United Kingdom, Nov. 25, 1977, 49199/77

Int. Cl.[2] C07D *471/04*

U.S. Cl. 424—256 **3 Claims**

1. Pyridine derivative of the formula:



and therapeutically acceptable salts thereof.

4,221,796

SUBSTITUTED IMIDAZOLO-PYRIDINES AND METHOD

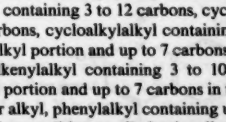
Peter C. Wade, Pennington; Jack Bernstein, New Brunswick, and Rudiger D. Haugwitz, Titusville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 909,731, May 25, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 77,256

Int. Cl.[3] C07D *213/72;* **A61K** *31/44*

U.S. Cl. 424—256 **9 Claims**

1. A compound of the structure



wherein R is lower alkynylalkyl containing 3 to 12 carbons, cycloalkyl containing 3 to 12 carbons, cycloalkenyl containing 3 to 10 carbons, cycloalkylalkyl containing 3 to 12 carbons in the cycloalkyl portion and up to 7 carbons in the alkyl portion, or cycloalkenylalkyl containing 3 to 10 carbons in the cycloalkenyl portion and up to 7 carbons in the alkyl portion and R^1 is lower alkyl, phenylalkyl containing up to 7 carbons in the alkyl portion or di-lower alkylaminoalkyl containing up to 7 carbons in the alkyl portion and n is 0, 1 or 2, and physiologically acceptable salts thereof.

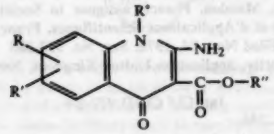
4,221,797
DIHYDROQUINOLINE-ONE DERIVATIVES

Goetz E. Hardtmann, Morristown, and Gary M. Coppola, Mt. Olive, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Aug. 14, 1978, Ser. No. 933,421
Int. Cl.[2] A61K *31/47;* C07D *215/56*
U.S. Cl. 424—258 11 Claims

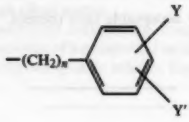
1. 1-allyl-3-cyano-1,2-dihydro-4-hydroxy-6,7-dimethoxy-2-oxo-quinoline.

2. A method of treating allergic condition due to histamine release comprising administering to a mammal in need of such treatment an allergy treating-effective dose of a compound selected from the group consisting of those with the structure of type A:



wherein

R^o is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or a group:



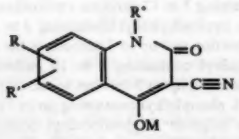
in which

n is 0 or 1,

Y and Y′ are, independently, hydrogen, fluoro, chloro or bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl; provided that the unsaturation in any alkenyl or alkynyl is other than on the alpha carbon atom; and

R and R′ are independently hydrogen, fluoro or chloro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl; provided that only one of R and R′ can be nitro or trifluoromethyl; or R and R′ together form 6,7-methylenedioxy; and

R″ is alkyl of from 1 to 4 carbon atoms or M, in which M is hydrogen or an equivalent of a cation which results in a salt which is pharmaceutically acceptable and those with the structure of type B:



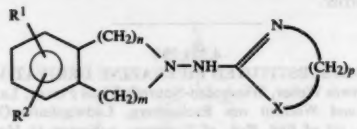
in which R^o, R, R′ and M are as defined.

4,221,798
HYPOTENSIVE 2-HETEROCYCLOAMINO-IMIDAZOLINES

Erich Cohnen, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,405
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816627; Feb. 14, 1979, 2905501
Int. Cl.[3] A61K *31/47, 31/415;* C07D *403/12, 401/12*
U.S. Cl. 424—258 10 Claims

1. A compound of the formula



wherein R^1 and R^2 may be the same or different and are selected from hydrogen, halogen, alkyl and alkoxy having one to four carbons, X is imino or alkanoylimino having 2 to 5 carbon atoms in the alkanoyl group, m=1, n=1 or 2, and p is 2, or a pharmaceutically acceptable acid addition salt thereof.

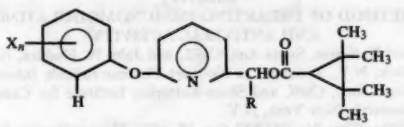
8. A method of lowering the blood pressure of a warm-blooded animal comprising administering to said animal a therapeutically effective amount of the compound of claim 1.

4,221,799
SUBSTITUTED PYRIDINE METHYL ESTERS OF TETRAMETHYL CYCLOPROPANE CARBOXYLIC ACIDS AND THEIR USE AS INSECTICIDES

John C. Van Heertum, Concord, and Sudarshan K. Malhotra, Walnut Creek, both of Calif., assignors to The Dow Chemical, Midland, Mich.

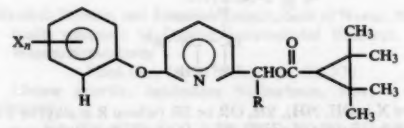
Filed Jul. 30, 1979, Ser. No. 62,452
Int. Cl.[2] A01N *9/22;* C07D *213/64*
U.S. Cl. 424—263 33 Claims

1. A compound corresponding to the formula



wherein n represents an integer of 0 to 2; X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro, bromo; n represents an integer of 0 to 2; and R represent hydrogen, cyano or ethynyl.

23. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition containing an inert carrier and as the active ingredient, an insecticidally effective amount of a compound corresponding to the formula



wherein n represents an integer of 0 to 2; X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon

atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro, bromo; n represents an integer of 0 to 2; and R represents hydrogen, cyano or ethynyl.

4,221,800

CYCLOALKENOCHROMONE

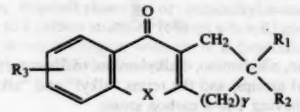
Brian T. Warren, Ickenham; John W. Spicer, High Wycombe, and Thomas Miller, Harefield, all of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 23, 1977, Ser. No. 863,688

Int. Cl.[2] C07D *257/04, 311/78;* A61K *31/35, 31/41*

U.S. Cl. 424—269 **36 Claims**

1. A compound of the formula,



and pharmacologically acceptable non-toxic salts thereof wherein:

X is selected from the group consisting of —O—, —S— and —SO_2—;

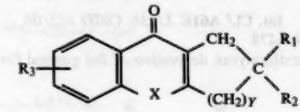
Y is 1 to 4;

R_1 is hydrogen or alkyl having from 1 to 3 carbon atoms;

R_2 is selected from the group consisting of hydrogen, alkyl having from 1 to 3 carbon atoms, phenyl, carboxyl, alkoxy having from 1 to 2 carbon atoms, benzyloxy, and alkoxycarbonyl having from 2 to 3 carbon atoms, with the proviso that when R_1 is alkyl, R_2 is hydrogen, alkyl or phenyl;

R_3 is selected from the group consisting of carboxyl, methylthio, methylsulfonyl, methylsulfinyl, alkoxycarbonyl having from 2 to 3 carbon atoms, and tetrazolyl, with the proviso that at least one of R_2 and R_3 is alkoxycarbonyl, carboxyl or tetrazolyl.

25. A therapeutic method for producing an anti-allergic effect in an individual for whom such therapy is indicated, comprising: administering to the individual an effective antiallergic amount of a compound of the formula,



and pharmacologically acceptable non-toxic salts thereof wherein:

X is selected from the group consisting of —O—, —S— and —SO_2—;

Y is 1 to 4;

R_1 is hydrogen or alkyl having from 1 to 3 carbon atoms;

R_2 is selected from the group consisting of hydrogen, alkyl having from 1 to 3 carbon atoms, phenyl, carboxyl, alkoxy having from 1 to 2 carbon atoms, benzyloxy, and alkoxycarbonyl having from 2 to 3 carbon atoms, with the proviso that when R_1 is alkyl, R_2 is hydrogen, alkyl or phenyl;

R_3 is selected from the group consisting of carboxyl, methylthio, methylsulfonyl, methylsulfinyl, alkoxycarbonyl having from 2 to 3 carbon atoms, and tetrazolyl, with the proviso that at least one of R_2 and R_3 is alkoxycarbonyl, carboxyl or tetrazolyl.

4,221,801

COMPOSITION FOR THE TREATMENT OF SOIL OR SEED AGAINST PHYTOPHAGOUS FUNGI

Johannes Kuipers, and Hendrik Dolman, both of Weesp, Netherlands, assignors to Duphar International Research, Weesp, Netherlands

Filed Nov. 30, 1978, Ser. No. 965,215

Claims priority, application Netherlands, Dec. 1, 1977, 7713267

Int. Cl.[2] A01N *9/12, 9/20*

U.S. Cl. 424—270 **3 Claims**

1. A composition for the protection of plants from soil borne or seed borne plant harmful fungi comprising a fungicidial effective amount of 2-cyano-5-nitro-thiazole and an inert carrier therefor.

4,221,802

PHARMACOLOGICALLY ACTIVE GUANIDINE COMPOUNDS FOR INHIBITING H-2 HISTAMINE RECEPTORS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

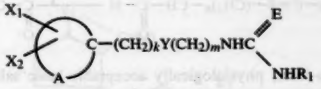
Division of Ser. No. 847,285, Oct. 31, 1977, Pat. No. 4,154,844, which is a division of Ser. No. 765,040, Feb. 2, 1977, Pat. No. 4,070,475, which is a division of Ser. No. 637,499, Dec. 4, 1975, Pat. No. 4,024,271, which is a division of Ser. No. 450,957, Mar. 14, 1974, Pat. No. 3,950,333, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Feb. 7, 1979, Ser. No. 10,105

Claims priority, application Ireland, Feb. 3, 1972, 136/72

Int. Cl.[2] A61K *31/44, 31/415*

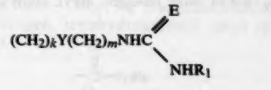
U.S. Cl. 424—273 B **9 Claims**

1. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a benzimidazole ring;

X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen; k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is NR_2; R_1 is hydrogen, lower alkyl or di-lower alkylamino-lower alkyl; and R_2 is hydrogen, nitro or cyano, or pharmaceutically acceptable addition salt thereof.

4,221,803

SUBSTITUTED DIBENZYL ETHERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAID ETHERS FOR THE TREATMENT OF INFECTIONS

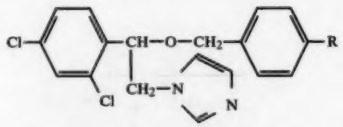
Dante Nardi; Elena Massarani; Alberto Tajana, all of Milan, and Mario Veronese, Bresso, all of Italy, assignors to Recordati, S.A., Chiasso, Switzerland

Filed May 9, 1979, Ser. No. 37,370

Int. Cl.[2] A61K *31/415;* **C07D** *233/60*

U.S. Cl. 424—273 R **8 Claims**

5. A pharmaceutical composition for the treatment of infections caused by fungi, yeasts and gram positive aerobic and anaerobic bacteria comprising an effective amount of a compound of the formula



wherein R represents a phenyl or phenylthio group, or a pharmaceutically acceptable addition salt thereof, in admixture with a pharmaceutically acceptable diluent or carrier.

4,221,804

MERCAPTOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

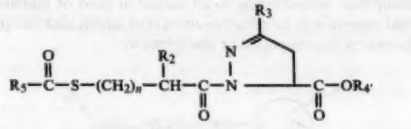
George C. Rovnyak, Hopewell, N.J. Assignor to E. R. Squibb & Sons, Inc. Princeton, N.J.

Division of Ser. No. 18,548, Mar. 8, 1979. This application Sep. 27, 1979, Ser. No. 79,291

Int. Cl.[3] C07D *231/06;* **A61K** *31/415*

U.S. Cl. 424—273 P **14 Claims**

1. A compound having the formula



or a non-toxic, physiologically acceptable basic salt thereof, where

R_2 is hydrogen or alkyl;

R_3 is aryl;

R_4 is hydrogen, alkyl or arylalkyl;

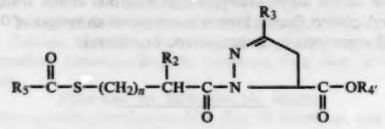
R_5 is alkyl or aryl; and

n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

14. A method for reducing blood pressure in mammals which comprises administering to a mammal in need thereof, an effective amount of a compound having the formula



or a non-toxic, physiologically acceptable basic salt thereof, wherein

R_2 is hydrogen or alkyl;

R_3 is aryl;

R_4 is hydrogen, alkyl or arylalkyl;

R_5 is alkyl or aryl; and

n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,221,805

METHOD OF INDUCING PLATELET ANTIAGGREGATION ACTIVITY

Giuseppe Quadro, Via Cappuccini 20, Milan, Italy

Filed Jul. 24, 1978, Ser. No. 927,726

Int. Cl.[2] A61K *31/40*

U.S. Cl. 424—274 **7 Claims**

1. The method of inducing platelet antiaggregation activity in a living subject in need of said treatment which consists of administering to said subject a composition comprising an effective amount therefor of the active ingredient N-(2-chlorobenzyl)-pyrrolidine or the hydrochloride salt thereof.

4,221,806

NOVEL BENZOTHIOPYRAN DERIVATIVES

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

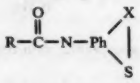
Filed Feb. 8, 1979, Ser. No. 10,456

Claims priority, application Luxembourg, Feb. 16, 1978, 79077

Int. Cl.[2] A61K *31/38;* **C07D** *335/06*

U.S. Cl. 424—275 **10 Claims**

1. A benzothiopyran derivative of the general formula



(I)

in which R is carboxy or lower alkoxycarbonyl, Ph is 1,2-phenylene containing the group R—CO—NR_3 – or said 1,2-phenylene group substituted by lower alkyl, lowr alkoxy, halogen or trifluoromethyl, X is a group of the formula —CO—CR_1=CR_2—, in which R_1 and R_2 independently of one another are hydrogen, lowr alkanoyl, lower alkyl or phenyl or together are 3-membered to 5-membered lower alkylene and R_2 can also be hydroxy, lower alkoxy or lowr alkanoyloxy, and R_3 is hydrogen or lowr alkyl or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical preparation comprising an antiphlogistically effective amount of a compound of claim 1 together with a pharmaceutically acceptable carrier.

4,221,807
ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 787,375, Apr. 14, 1977, Pat. No. 4,141,987, which is a division of Ser. No. 582,883, Jun. 2, 1975, Pat. No. 4,034,106. This application Feb. 26, 1979, Ser. No. 15,411

Claims priority, application United Kingdom, Jun. 5, 1974, 24837/74

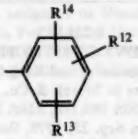
Int. Cl.[2] A01N *9/28*; C07D *319/08*

U.S. Cl. 424—278 **9 Claims**

1. An alkanolamine derivative selected from a compound of the formula:

$$R.OCH_2.CHOH.CH_2NH—A—NH—X—Y—R^1$$

wherein A is alkylene of from 2 to 12 carbon atoms; wherein X is carbonyl (—CO—) or sulphonyl ($—SO_2—$); wherein Y is a direct link, or is alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or imino (—NH—), or alkylimino, iminoalkylene, iminoalkyleneoxy or iminoalkylenecarbonyloxy each of up to 6 carbon atoms, or (except when R^1 stands for the hydrogen atom) is oxygen; wherein R is benzodioxanyl and wherein R^1 is aryl of the formula:



wherein R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, or alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^{12} and R^{13} together, form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; and wherein R^{14} is hydrogen or amidic of the formula:

$$R^{15}R^{16}N—CO—Q—$$

$$R^{15}R^{16}N—CO—NH—Q—$$

$$R^{15}R^{16}N—CO—Q^1—O—$$

or

$$R^{16}—X—NR^{15}—Q—$$

wherein Q is a direct link or is alkylene or alkenylene each of up to 6 carbon atoms; wherein Q^1 is alkylene of up to 6 carbon atoms; wherein R^{15} is hydrogen or alkyl of up to 6 carbon atoms; wherein R^{16} is hydrogen or alkenyl, cycloalkyl, hydroxyalkyl or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms; or wherein R^1 is hydrogen or alkyl, halogenoalkyl, alkenyl or cycloalkyl each of up to 10 carbon atoms, and a pharmaceutically acceptable acid-addition salt thereof.

6. A pharmaceutical composition for producing coronary β-adrenergic blockade comprising as active ingredient a β-adrenergic blocking effective amount of at lease one alkanolamine derivative or a pharmaceutically acceptable acid-addition salt thereof, claimed in claim 1, in association with a pharmaceutically-acceptable diluent or carrier therefor.

7. A method for producing coronary β-adrenergic blockade in a warm-blooded animal in need of such blockade which comprises administering to said animal a β-adrenergic blocking effective amount of at least one compound claimed in claim 1.

8. A method for the treatment of angina or cardiac arrythmias in a warm-blooded animal which comprises administering to said animal an anti-angina or anti-cardiac arrythmias effective amount of at least one compound claimed in claim 1.

9. A method for the treatment of hypertension in a warm-blooded animal which comprises administering to said animal an anti-hypertensive effective amount of at least one compound claimed in claim 1.

4,221,808
NOVEL ANTIHYPERTENSIVE AGENT

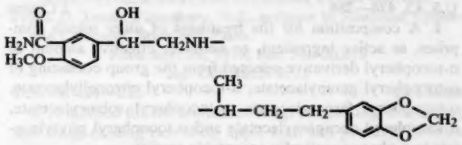
J. Martin Grisar, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed May 4, 1979, Ser. No. 36,256

Int. Cl.[2] A61K *31/335*; C07D *317/06, 317/44*

U.S. Cl. 424—278 **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt or individual optical isomer thereof.

4. A method of treating hypertension in a patient in need thereof which comprises administering to said patient an anti-hypertensive effective amount of a compound of claim 1.

4,221,809
β-LACTONES OF 2-HYDROXY-CYCLOPENTANECARBOXYLIC ACID

Jean Buendia, Nogent-sur-Marne, and Michel Vivat, Lagny-sur-Marne, both of France, assignors to Roussel Uclaf, Paris, France

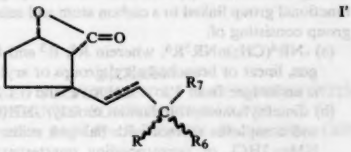
Continuation-in-part of Ser. No. 779,178, Mar. 18, 1977, abandoned. This application May 8, 1979, Ser. No. 36,877

Claims priority, application France, Oct. 23, 1978, 78 30054

Int. Cl.[2] C07D *305/14*; A61K *31/365*

U.S. Cl. 424—279 **16 Claims**

1. A lactone of the formula



I'

wherein the dotted line indicates the optional presence of a second bond, R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms, R_6 is $—OR_A'$, R_A' is selected from the group consisting of hydrogen, tetrahydropyranyl, alkyl of 1 to 3 carbon atoms and

R_A'' is selected from the group consisting of alkyl of 1 to 3 carbon atoms optionally substituted with carboxyl and phenyl optionally substituted with a member of the group consisting of carboxyl, free hydroxyl, hydroxyl protected with an alkan-

oyl of 2 to 4 carbon atoms and hydroxyl protected with an easily hydrolyzable group, R_7 is $-(CH_2)_{m,4}-CH_3$, m,4 is 3,4,5 or 6 and the wavy lines represent a paired configuration selected from the group consisting of α,β, and β,α and mixtures thereof.

14. A method of relieving hypertension and circulatory troubles in warm-blooded animals comprising administering to warm-blooded animals a hypotensively effective amount of a compound of claim 1.

4,221,810

ANTIULCER COMPOUNDS

Yoshiyuki Tahara, Oi; Michiko Nagai, Wako; Katsura Kogure, Kawagoe; Shigeo Kawase, Tsurugashima, and Teruhito Yamaguchi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,568

Int. Cl.[2] A61K *31/355;* **C07D** *311/72*

U.S. Cl. 424—284 **2 Claims**

1. A composition for the treatment of ulcer which comprises, as active ingredient, an antiulcer effective amount of α-tocopheryl derivative selected from the group consisting of α-tocopheryl geranylacetate, α-tocopheryl citronellylacetate, α-tocopheryl farnesylacetate, α-tocopheryl solaneylacetate, α-tocopheryl decaprenylacetate and α-tocopheryl phytylacetate in a pharmaceutically acceptable carrier.

4,221,811

ANTIFUNGAL AND/OR ANTIBACTERIAL ORGANOTIN COMPOUNDS, AND USE

Eric J. Bulten, Bilthoven, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Jan. 16, 1978, Ser. No. 870,038

Claims priority, application United Kingdom, Jan. 17, 1977, 1779/77

Int. Cl.[2] A01N *9/00;* **C07F** *7/22*

U.S. Cl. 424—288 **3 Claims**

1. An organotin compound having the formula:

$$\{R_x{}^1R_y{}^2R_z{}^3Sn[(CH_2)_nl_q\}_p X_q$$

wherein R^1, R^2 and R^3 are linear or branched alkyl groups having at most five (5) carbon atoms or aryl groups, X is a functional group linked to a carbon atom and selected from the group consisting of:

(a) $-NR^4(CH_2)nNR^5R^6$, wherein R^4, R^5 and R^6 are hydrogen, linear or branched alkyl groups or aryl groups and n is an integer from 1 to 4 inclusive; and

(b) dimethylaminopropylamine moiety, $-NH(CH_2)_3-NMe_2$- and complexes thereof with halogen acids, $-NH-(CH_2)_3-NMe_2.2HCl$, or corresponding quarternary ammonium derivatives, $[-NHR(CH_2)_3-NMe_2R]^{2+}2Z^-$ wherein R is a linear or branched alkyl group and Z is halogen or another suitable anionic group; and x,y,z, n, p and q are integers, n being 1 to 4 inclusive, p being 1 to 3 inclusive, q being 1 or 2, and if q equals 2 then x+y+z equals 2 and p equals 1 and if q equals 1 then x+y+z equals 3.

2. An antifungal and (or) antibacterial composition comprising as an active ingredient at least one compound according to claim 1 in an amount effective to impart antifungal and (or) antibacterial properties, and in combination with a suitable solid or liquid carrier.

3. A process for controlling fungi and (or) bacteria comprising contacting said fungi and (or) bacteria with a compound according to claim 1, in an amount effective for the control of the fungi and (or) bacteria.

4,221,812

PESTICIDAL SPIROPENTANECARBOXYLATES

Jozef Drabek, Oberwil; Hans Greuter, Eiken, and Pierre Martin, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

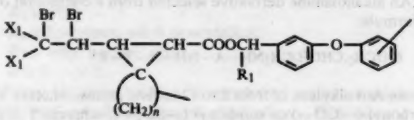
Filed Feb. 5, 1979, Ser. No. 9,317

Claims priority, application Switzerland, Feb. 9, 1978, 1452/78; Dec. 19, 1978, 12884/78

Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *69/74, 121/66*

U.S. Cl. 424—304 **4 Claims**

1. A cyclopropanecarboxylic acid ester of the formula



wherein X_1 represents chlorine or bromine, R_1 represents hydrogen, methyl, vinyl, ethynyl or cyano, Y_1 represents hydrogen, fluorine, chlorine or bromine, and n is 2.

4. A method for combatting insects and acarids which comprises applying thereto or the locus thereof an insecticidally or acaricidally effective amount of a compound of claim 1.

4,221,813

TREATMENT OF HYPERTENSION

George O. Breault, Creamery, and King C. Kwan, Doylestown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 782,146, Mar. 28, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,355

Int. Cl.[2] A61K *31/24*

U.S. Cl. 424—309 **13 Claims**

1. A method of treating hypertension which comprises oral administration in non-liquid form once daily to a hypertensive human of about 750 mg. to about 2500 mg. of the ethyl ester of L-α-methyl-3,4-dihydroxyphenylalanine, or a pharmaceutically acceptable salt thereof.

4,221,814

TEREPHTHALIC ACID MONOAMIDE DERIVATIVES, PROCESS FOR PREPARING THE SAME, AND AN ANTI-ALLERGIC AGENT PREPARED FROM THE SAME

Sakae Takaku, Ageo; Takashi Mori; Yasushi Murakami, both of Tokyo; Yoshiyuki Ohsugi, Izumi; Shigeyuki Kataoka, Sakado; Yasuhisa Takeda, Yokohama; Takashi Matsuno, Omiya; Yoshimitsu Iida, Wako; Akiko Ariga, Nagareyama; Akira Okazaki, Oyama; Kazuo Igusa, Tokorozawa; Toshichika Ogasawara, and Minoru Shindo, both of Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

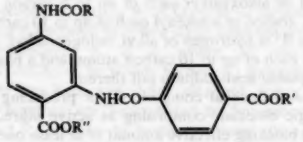
Filed Jun. 1, 1979, Ser. No. 44,687

Claims priority, application Japan, Jun. 9, 1978, 53-68931; Dec. 5, 1978, 53-149696

Int. Cl.[2] A61K *31/245;* **C07C** *101/44*

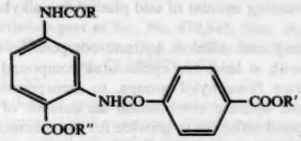
U.S. Cl. 424—310 **18 Claims**

1. A terephthalic acid monoamide derivative of the formula:



(wherein R is a straight- or branched-chain lower alkyl group; R′ and R″ may be the same or different, and represent a hydrogen atom, or a straight- or branched-chain lower alkyl group) or pharmaceutically acceptable salts thereof.

18. An anti-allergic composition consisting essentially of an effective amount of a terephthalic acid monoamide derivative of the formula:



(wherein R is a straight- or branched-chain lower alkyl group; R' and R" may be the same or different, and represent a hydrogen atom or a straight- or branched-chain lower alkyl group) or a pharmaceutically acceptable salt thereof and a pharmaceutical carrier.

4,221,815

BENZOIC ACIDS, THEIR DERIVATIVES AND PROCESS FOR PREPARING THEM

Rudi Weyer, Kelkheim; Volker Hitzel, Lorsbach; Karl Geisen, Frankfurt am Main, and Werner Pfaff, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

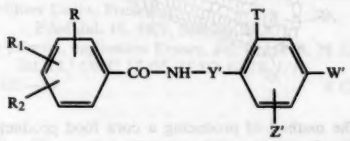
Filed Jan. 2, 1976, Ser. No. 646,378

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1975, 2500157

Int. Cl.[2] A61K *31/195;* C07C *101/72*

U.S. Cl. 424—319 **12 Claims**

1. A benzoic acid derivative of the formula



in which

T' is hydrogen or halogen;

W' represents a carboxyl group, an ester or a salt thereof;

R is hydrogen, alkyl, alkoxy, alkenoxy, alkoxy-alkoxy, phenoxy, halogen, anilino or trifluoromethyl;

R_1 and R_2, independently of each other, are hydrogen, alkyl, alkoxy or halogen;

Y' is a hydrocarbon radical of 2 to 3 carbon atoms; and

Z' is hydrogen, halogen or alkyl,

9. A method of treatment which comprises orally administering to a diabetic patient an effective amount of a compound defined in claim 1.

4,221,816

METHOD FOR THE CONTROL OF PHYTOPATHOGENIC FUNGI USING P-(ALKOXYALKYL)UREA COMPOUNDS

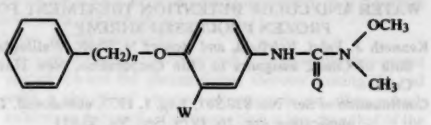
Frank D. Tenne, Plainsboro, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,678

Int. Cl.[2] A01N *9/12*

U.S. Cl. 424—322 **11 Claims**

1. A method for the control of plant pathogenic fungi causing apple scab, rice blast and powdery mildew comprising contacting said fungi with a fungicidally effective amount of a compound of formula:



wherein W is hydrogen or Cl; Q is O or S; n is an integer of from 2 to 3.

4,221,817

METHOD FOR THE CONTROL OF PHYTOPATHOGENIC FUNGI USING PHENYLALKOXYPHENYLUREA COMPOUNDS

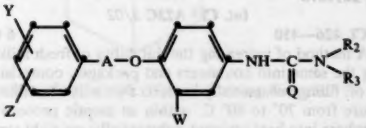
Frank D. Tenne, Plainsboro, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,679

Int. Cl.[2] A01N *9/12*

U.S. Cl. 424—322 **13 Claims**

1. A method for the control of fungi comprising, contacting said fungi causing rice blast, apple scab and powdery mildew with a fungicidally effective amount of a compound having the formula:



wherein Q is O or S; Y is selected from the group consisting of hydrogen, Cl, CH_3, CH_3O, F and NO_2; Z is hydrogen or CH_3O; W is selected from the group consisting of hydrogen, CH_3, CH_3O, Cl and NO_2; R_2 is hydrogen, CH_3 and C_2H_5; R_3 is CH_3 and C_2H_5; A is a C_2–C_8 carbon chain (straight or branched) which may be saturated or unsaturated.

4,221,818

ANIMAL FEED SUPPLEMENT IN BLOCK FORM WITH REDUCED CONSUMPTION RATE

Jack J. Schroeder, #4 N. Quail Ridge Rd., Rolling Hills, Calif. 90274

Filed Aug. 31, 1978, Ser. No. 938,632

Int. Cl.[2] A23K *1/02*

U.S. Cl. 426—138 **10 Claims**

1. An animal feed supplement in the form of a solid block comprising from 12 to about 95 weight percent of a sugar solution with optional ingredients comprising up to about 25 weight percent fat, and up to about 40 weight percent of a protein source and 1 to about 5 weight percent of each of calcium and phosphorus added thereto as calcium oxide and phosphoric acid to cause said supplement to solidify into solid block form packaged in an animal edible paper carton and having disposed therein a sufficient number of animal edible vertical cardboard partitions extending through the solid block to physically interfere with and substantially reduce the consumption thereof by animals.

4,221,819

WATER AND COLOR RETENTION TREATMENT FOR FROZEN PROCESSED SHRIMP

Kenneth J. Falci, Fairfield, and Robert N. Scott, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 820,981, Aug. 1, 1977, abandoned. This application Apr. 26, 1979, Ser. No. 33,611

Int. Cl.[3] A22C *29/02*

U.S. Cl. 426—262 11 Claims

1. In a process for treating shrimp that comprises

(a) soaking whole, peeled and deveinned shrimp in an aqueous solution containing at least one phosphate salt; and

(b) thereafter freezing said soaked shrimp to preserve said shrimp to later cooking and consumption;

wherein the improvement comprises:

carrying out said soaking step for sufficient time and in the presence of an effective amount of a trace metal salt selected from the group consisting of calcium salts, magnesium salts, and mixtures thereof, in order to substantially maintain the trace metal content in said shrimp, whereby said treated shrimp will have white tissue coloration and a natural tender texture after cooking.

4,221,820

METHOD OF INCREASING THE DURABILITY OF MILK

Hans G. Jentsch, Daimlerstrasse 4, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 793,251, May 3, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,475

Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2619073

Int. Cl.[2] A23C *3/02*

U.S. Cl. 426—410 6 Claims

4. A method of increasing the durability of fresh milk when filling the same into containers and packages, comprising the steps of: filling substantially bacteria free milk at a filling temperature from 70° to 80° C. within an aseptic protective gas atmosphere into heat resistant, substantially gas-tight synthetic foil packages; closing said packages; and immediately thereafter cooling the milk in several stages, first rapidly to 50° to 60° C. and thereafter to a predetermined storage temperature, said steps of filling and closing of the container until reaching the first recooling stage to 50° to 60° C., being carried out within a hot holding period of approximately 40 to 50 seconds.

4,221,821

SHAPED ARTICLE COMPRISING A PERMANENTLY PLASTICIZED CELLULOSE COMPOSITION OF HIGH MECHANICAL STRENGTH AND PREPARATION THEREOF

Klaus-Dieter Hammer, Mainz; Günter Gerigk, Oberursel; Wolf-Rainer Neeff, Wiesbaden, and Max Bytzek, Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,980

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654418

Int. Cl.[2] C08L *1/06*

U.S. Cl. 426—420 77 Claims

1. A shaped article comprising a plasticized, chemically-modified cellulose composition of high mechanical strength, said composition being produced by the steps of:

(a) preparing a viscose solution containing a plasticity-enhancing amount of at least one plasticizing alkyl derivative containing at least one alkyl group having from about 8 to about 24 carbon atoms, said alkyl derivative being selected from the group consisting of alkylamido-bis-dimethylene-triazinone-tetramethylol, alkyl-amino-bis-dimethylene-triazinonetetramethylol, a substantially water-insoluble ester of an aliphatic monocarboxylic acid containing from about 9 to about 25 carbon atoms with a polyalcohol comprising at least two hydroxy groups at least one of which is esterified with said aliphatic monocarboxylic acid, and a mixture thereof;

(b) precipitating said viscose solution to produce a cellulose hydrate composition in the gel-state containing a plasticity-enhancing amount of said plasticizing alkyl derivative; and

(c) treating said cellulose hydrate composition in the gel-state with at least one cyclic urea compound having at least two N-methylol groups, to incorporate into said cellulose hydrate composition an amount of said urea compound sufficient to provide for a mechanical strength enhancing degree of crosslinking; and

(d) heating the treated cellulose hydrate composition to an extent sufficient to crosslink the cellulose hydrate molecules with said urea compound.

4,221,822

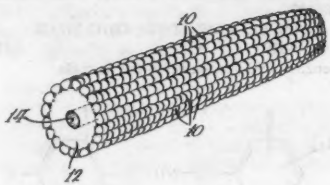
PROCESSED, FROZEN EAR OF CORN AND METHOD OF COOKING THE SAME

Herbert Horn; Helene Horn; Charles S. Horn, and Joseph Horn, all of Mattoon, Ill., assignors to Horn's Poultry, Inc., Mattoon, Ill.

Filed Feb. 9, 1976, Ser. No. 656,368

Int. Cl.[3] A23L *1/212*

U.S. Cl. 426—438 2 Claims



1. The method of producing a corn food product which comprises forming an axial passage in and extending along the majority of the length of a husked ear of corn, freezing the ear of corn to a temperature of between −15° F. to 10° F., introducing the frozen ear of corn into a bath of cooking oil at a temperature in the range of about 325° F. to 375° F. and maintaining the ear in the bath for about 4 to 8 minutes.

4,221,823

PROCESS FOR MOUNTING PALYNOLOGICAL SPECIMENS

Michael B. Pearson; Sharon A. Meyer, and Francis J. Shell, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartleville, Okla.

Filed Apr. 21, 1978, Ser. No. 898,552

Int. Cl.[2] G01N *1/28*

U.S. Cl. 427—4 18 Claims

1. A process comprising:

forming a solution comprising water and at least one water-soluble salt selected from the group consisting of carboxymethyl cellulose, carboxyethyl cellulose, carboxypropyl cellulose, carboxymethyl hydroxyethyl cellulose, carboxyethyl hydroxyethyl cellulose, and carboxymethyl hydroxymethyl cellulose wherein the amount of the water-soluble salt is within the range of about 0.3 to about 1.5 weight percent based on the weight of the solution,

placing at least a portion of said solution on a support along with a suitable amount of a specimen.

4,221,824
METHOD FOR ENAMELING FERROUS OBJECTS

Ralph A. Leonard, River Forest, and Otto C. Linhart, Riverside, both of Ill., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 670,945, Mar. 26, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,796

Int. Cl.² B05D *3/02*

U.S. Cl. 427—27 **8 Claims**

1. The method of applying a porcelain enamel coating to a ferrous workpiece which comprises cleaning said workpiece to leave a clean, unpickled, nickel-free surface, applying a dry particulate reactive porcelain enamel coating to said surface, said reactive coating being capable of fusing into a molten mass which significantly etches the underlying surface, said reactive coating containing at least one oxide selected from the group consisting of cupric oxide, nickel oxide, cobalt oxide, and manganese oxide, and mixtures thereof, said reactive coating containing at least 5% by weight of said selected oxide, said reactive coating further containing at least 1% cupric oxide, and having an alkali to silica ratio of at least 0.40, applying a cover coat of porcelain enamel having a melting temperature at least 100° F. higher than that of said reactive coating over said reactive coating, the fusion flow of the reactive coating at 1520° F. being at least twice as long as that of said cover coat, firing the thus coated workpiece at a temperature sufficient to first cause the reactive coating to fuse and adhere to the workpiece by etching the same, and raising the temperature sufficiently high to fuse said cover coat.

4,221,825
CONTINUOUS PRODUCTION OF SYNTHETIC SILICA DOPED WITH FLUORINE

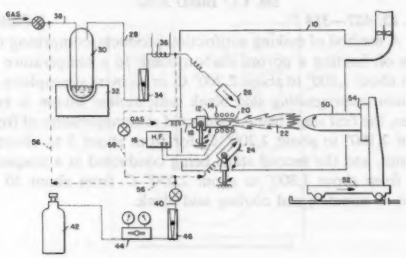
Pierre Guerder, Pithiviers, and Andre Ranson, Rueil-Malmaison, both of France, assignors to Saint-Gobain Industries, Aubervilliers Cedex, France

Filed Jul. 18, 1979, Ser. No. 58,471

Claims priority, application France, Jul. 31, 1978, 78 22559

Int. Cl.² C03C *17/02, 25/02;* **G02B** *1/10*

U.S. Cl. 427—34 **6 Claims**



1. A process for continuously manufacturing synthetic silica which is doped with fluorine and has less than 5 parts per million hydroxyl ions comprising:

(a) decomposing a hydrogen-free silicon compound, typically silicon tetrachloride, directed into the flame of an inductive plasma burner whereby the silicon compound reacts with the oxygen contained in the burner feed gas to form silica;

(b) introducing a gaseous, inorganic fluorine dopant which is one of the group of sulfur hexafluoride, nitrogen trifluoride or a mixture thereof into the burner flame wherein the dopant decomposes under heat and is free of hydrogen thereby lowering the index of refraction of synthetic silica; and

(c) depositing a vitreous mass of the doped silica on a heat stable support moved both in rotation and in longitudinal movement.

5. The process according to claim 1 or 2 wherein the silica formed in the plasma flame is deposited radially on a synthetic vitreous silica rod which is:

(a) free of OH ions; and

(b) moved in both a rotational and a longitudinal movement angled toward the plasma flame; thereby coating the rod with a sheath of vitreous, fluorine-doped silica which exhibits an index of refraction which is less than that of the rod.

4,221,826
COMPOSITION FOR MAKING LEADS IN INTEGRATED MICROCIRCUITS AND METHOD FOR MAKING SAME USING SAID COMPOSITION

Valentinas B. Baltrushaitis, ulitsa Vairo, 9, kv. 34, and Kestutis V. Sadauskas, ulitsa Shlaito, 24, kv. 1, both of Kaunas, U.S.S.R.

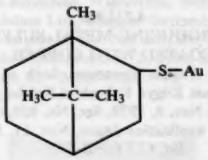
Filed Nov. 2, 1978, Ser. No. 957,292

Claims priority, application U.S.S.R., Dec. 6, 1977, 2550672[1]

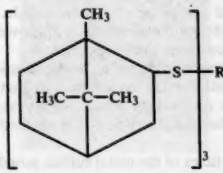
Int. Cl.² B05D *5/12*

U.S. Cl. 427—96 **2 Claims**

1. A composition for making leads in integrated microcircuits, comprising gold bornylmercaptide of the following formula:



rhodium bornylmercaptide of the following formula:



bismuth dibutyldithiocarbamate, chromium abietinate, colophony, chloroform and cyclohexanone, the ratio of the components being as follows, % by weight:

gold bornylmercaptide	22.2–20.0
rhodium bornylmercaptide	1.0–1.1
bismuth dibutyldithiocarbamate	1.55–1.4
chromium abietinate	1.10–1.20
colophony	10.55–9.5
chloroform	31.8–33.4
cyclohexanone	31.8–33.4.

4,221,827
METHOD OF MANUFACTURING A GAS SENSOR

John M. Parry, Sudbury, Mass., and Paul Raccah, Chicago, Ill., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 19, 1978, Ser. No. 970,878

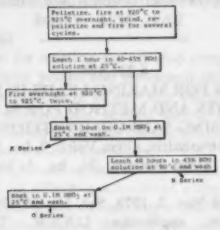
Int. Cl.² G01N *27/04;* **H01C** *13/00*

U.S. Cl. 427—125 **11 Claims**

11. A method of manufacturing a carbon monoxide sensor comprising the steps of

heating a mixture of salts of lanthanum, strontium and cobalt to convert most of the mixture into a material having a perovskite crystal of the type

$La_{1-n}Sr_nCoO_{3-m}$



where n is about 0.07 and m is approximately 0;

removing substantially all oxides of La, Sr and Co from said mixture; and

coupling a mass of the oxide-free mixture between a pair of electrical leads.

4,221,828

PROCESS OF PRODUCING METAL SULFIDE POWDER COATED WITH COPPER

Haruki Sato, and Yoshio Kawasumi, both of Urawa, Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1978, Ser. No. 959,028

Claims priority, application Japan, Nov. 11, 1977, 52-134726

Int. Cl.[2] B05D *7/00*

U.S. Cl. 427—217 **13 Claims**

1. A process of producing metal sulfide powder coated with copper comprising the steps of:

providing preliminarily granulated and sized power of a predetermined size range of a metal sulfide,

mixing the powder of metal sulfide with powder of a metal and/or an alloy baser than copper, and

adding to the mixture produced an acidic solution containing copper ions with stirring in such manner that the funicular (II) region is reached in about twenty seconds to ten minutes and then the slurry region is reached in five to ten seconds,

whereby the particles of the metal sulfide powder are coated with metallic copper that results from a cementation reaction.

4,221,829

METHOD FOR PREPARING A GRANULAR THERMOSETTING NOVOLAK RESIN MOLDING COMPOSITION

Silvio Vargiu, Casatenovo, and Pierluigi Manzoni, Codogno, both of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Jan. 18, 1979, Ser. No. 4,527

Claims priority, application Italy, Jan. 19, 1978, 19416 A/78

Int. Cl.[2] B32B *27/42*; C08L *61/10*

U.S. Cl. 427—222 **8 Claims**

1. A method for preparing a granular thermosetting molding composition including a novolak phenolic resin with modified surface characteristics, which comprises forming said molding composition into granules of from 2 to 9 mm in size and mixing said granules with an amount of from 0.7 to 2.5 wt.%, based on the weight of the granules, of a mixture of acetone and one or more polymers of alkyl esters of acrylic and methacrylic acids having from 1 to 5 carbon atoms in the alkyl radical, said polymers being present in the mixture in an amount of from 1 to 20% by weight, at a temperature such as to maintain said mixture in liquid form and for a period such as to insure absorption of said mixture by said granules, and drying said granules to substantially remove said acetone, whereby the surface of said granules is modified to render the granules free from a tendency to release dust during handling.

4,221,830

METHOD FOR PRODUCING ANTISTATIC SYNTHETIC POLYMER FILM, ARTICLE MADE THEREBY, AND METHOD OF USE

Marcel Dalens, Carmaux, and Armand Haas, Mazingarbe, both of France, assignors to Societe des Plastiques de Carmaux SCASAR and Societe Chimique des Charbonnages CdF Chimie

Filed Dec. 7, 1976, Ser. No. 748,214

Claims priority, application France, Oct. 24, 1975, 75 32697

Int. Cl.[2] B05D *5/12*; B32B *27/14*

U.S. Cl. 427—256 **5 Claims**

1. The method of producing an antistatic film of synthetic polymer consisting essentially of continuously printing over at least part of the surface of at least one side of the film with aluminum powder by suspending in solvent a composition consisting essentially of aluminum powder and a polyamide resin, setting said suspension down onto said film, and permitting said solvent to evaporate, said synthetic polymer of said antistatic film being selected from the group consisting of low density polyethylene, high density polyethylene, polypropylene, and polybutene.

4,221,831

METHOD OF MAKING ANTIFRICTION PRODUCTS

Valery I. Kostikov, ulitsa Vavilova, 93, kv. 91; Alexandr S. Tarabanov, ulitsa Sayanskaya, 6, kv. 123, both of Moscow; Vitaly A. Ivanov, ulitsa Sovetskaya, 6, kv. 91, Zheleznodorozhny Moskovskoi, and Anatoly M. Zykov, ulitsa Metallurgov, 13, kv. 14, Chelyabinsk, all of U.S.S.R.

Filed Jul. 31, 1978, Ser. No. 929,439

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—314 **3 Claims**

1. A method of making antifriction products, comprising the steps of: heating a porous carbon blank to a temperature of from about 1,800° to about 2,200° C. in an inert atmosphere or vacuum; impregnating said blank with molten silicon in two stages, the first stage being conducted at a temperature of from about 2,100° to about 2,200° C. for from about 3 to about 5 minutes, and the second stage being conducted at a temperature from about 1,800° to about 2,050° C. from about 30 to about 40 minutes; and cooling said blank.

4,221,832

SURFACE TREATMENT OF METAL STRIP

Paulus Philippe; Leroy Vincent, and Henri Graas, all of Liege, Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Mar. 13, 1979, Ser. No. 20,198

Claims priority, application Belgium, Mar. 14, 1978, 864898; Luxembourg, Mar. 14, 1978, 79224

Int. Cl.[2] C23C *3/00*

U.S. Cl. 427—319 **26 Claims**

1. A process for surface-treating a metal strip and coating it with a metal layer, comprising the following steps;

(a) heating the strip to a temperature above 300° C.; and

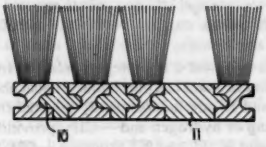
(b) immersing the strip in an aqueous coating bath having a temperature of at least 80° C. and containing at least one metal,salt, the strip being coated with a metal layer by the coating bath.

4,221,833

PILE TEXTILE ARTICLE AND PROCESS FOR PREPARATION

René Guillermin, Bron; Jean Joly, Craponne, and Joseph Puthon, Lyon, all of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Dec. 27, 1978, Ser. No. 864,535
Int. Cl.[2] A46B 1/00
U.S. Cl. 428—92 32 Claims



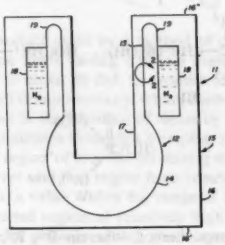
12. A textile pile article comprising:
(a) a plurality of textile pile elements comprised of a plurality of substantially parallel textile materials having a base joining the materials at one end; and
(b) an extruded mesh comprised of a plurality of substantially parallel longitudinal members and substantially parallel transverse members intersecting said longitudinal members forming openings therebetween, said members joined at the point of intersection, said base located within the opening of the mesh and being supported by said longitudinal members and said transverse members.

4,221,834

SUPERCONDUCTIVE MAGNETIC SHIELD AND METHOD OF MAKING SAME

James E. Opfer; John M. Pierce, both of Palo Alto, and Lawrence E. Valby, Mountain View, all of Calif., assignors to Develco, Inc., Mountain View, Calif.

Filed Nov. 17, 1975, Ser. No. 632,208
Int. Cl.[2] B32B 7/14; H01L 39/02, 39/14
U.S. Cl. 428—198 5 Claims



1. In a method for fabricating a superconductive magnetic shield, the step of:
securing a sheet of superconductive magnetic shield material having a first coefficient of thermal expansion to a support structure having a substantially different coefficient of thermal expansion by attaching said sheet to said support at a multiplicity of spaced positions so that said sheet can bend sufficiently in the spaces in between adjacent ones of said positions of attachment to relieve the strain caused by thermal cycling of said support and said shield, whereby cracks do not develop in said shield with repeated thermal cycling thereof in use; and
including the step of thermally coupling said sheet of superconductive shield material to a heat sink to be operated at liquid helium temperature for cooling said sheet to a superconducting temperature.

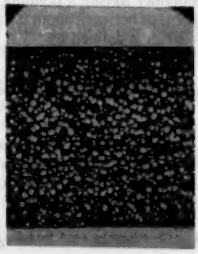
4. In a superconductive magnetic shield:
magnetic shield means including a sheet of superconductive magnetic shield material having a first coefficient of thermal expansion;
support means for supporting said magnetic shield means and having a second coefficient of thermal expansion substantially different than that of said first coefficient of thermal expansion;
said magnetic shield means and said support means having mutually opposed major faces;
attaching means for attaching together said major faces of said magnetic shield means and said support means at a multiplicity of spaced spots so that said shield means can bend sufficiently in the spaces in between adjacent ones of said spots of attachment to relieve the strain caused by thermal cycling of said support means and said magnetic shield means, whereby cracks do not develop in said magnetic shield means with repeated thermal cycling thereof in use; and
including heat sink means coupled in heat exchanging relation with said shield means for operation at liquid helium temperature for cooling said shield means to a superconductive temperature.

4,221,835

COMPOSITE PANELS WHICH ARE NOT EASILY COMBUSTIBLE

Harald Severus-Laubenfeld, Winterthur, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 553,289, Feb. 26, 1975, abandoned. This application Jan. 2, 1979, Ser. No. 974,647
Int. Cl.[2] B32B 7/02, 3/26, 5/18
U.S. Cl. 428—215 12 Claims



1. A fire resistant composite panel which is readily formable at room temperature comprising:
a foamed rigid themoplastic core having a plurality of fine pores homogeneously disposed therein, said pores containing a non-combustible gas mixture comprising about 55% N_2, 15% CO_2, 15% CO and 15% NH_3;
a metallic cover layer disposed on each side of said core; and
adhesive means operable to bond said cover layers to said core, said adhesive means possessing good resistance to shear forces at elevated temperatures.

4,221,836

COEXTRUDED PLASTIC SHEETING

Raleigh N. Rutledge, and Bob J. Cruson, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Big Spring, Tex.

Filed Nov. 23, 1977, Ser. No. 854,329
Int. Cl.[2] B32B 25/08
U.S. Cl. 428—220 15 Claims

1. A co-extruded plastic composite comprising:
(a) a base layer of a styrene polymer selected from the group consisting of homopolystryene, impact polystyrene, and normal copolymers of styrene containing a minor amount of another copolymerizable monomer;
(b) an outer layer of an ABS polymer normally incompatible with said styrene polymer; and

(c) an intermediate layer of a second ABS polymer disposed between said styrene polymer base layer and said ABS polymer outer layer, having a bonding factor with said styrene polymer (BF_{C1}) of between 0.9 and 1.15 wherein said bonding factor is defined by

$$BF_{C1} = \frac{A(15.4) + B(8.6) + S(9.1)}{\delta_1}$$

Wherein A,B, and S are the respective weight percentages of acrylonitrile, butadiene, and styrene in said second ABS polymer, δ_1 is the Hildebrand solubility parameter for said styrene polymer, and A is less than about 0.4 S, and having a bonding factor with said normally incompatible ABS polymer (BF_{C2}) of between 0.9 and 1.15 wherein said bonding factor BF_{C2} is defined by

$$BF_{C2} = \frac{A_2(15.4) + B_2(8.6) + S_2(9.1)}{BF_{C1}\,\delta_1}$$

Wherein A_2, B_2, and S_2 are the respective weight percentages of acrylonitrile, butadiene, and styrene in said normally incompatible ABS polymer, and BF_{C1} and δ_1 are as defined above, and having further a melt viscosity under extrusion conditions between about 50 to 150% of the melt viscosities of each of said styrene polymer and said normally incompatible ABS polymer.

9. A process for the manufacture of a co-extruded laminated plastic sheet from a styrene polymer and ABS polymer normally incompatible therewith, comprising co-extruding said polystyrene polymer and said normally incompatible ABS polymer in an extrusion die with an intermediate layer therebetween of an ABS polymer having a bonding factor with said styrene polymer (BF_{C1}) of between about 0.9 and 1.15 wherein said bonding factor BF_{C1} is defined by

$$BF_{C1} = \frac{A(15.4) + B(8.6) + S(9.1)}{\delta_1}$$

wherein A,B, and S are the respective weight percentages of acrylonitrile, butadiene, and styrene in said intermediate layer ABS polymer, δ_1 is the Hildebrand solubility parameter for said styrene polymer, and A is less than about 0.4 S, a bonding factor with said normally incompatible ABS polymer (BF_{C2}) of between 0.9 and 1.15 wherein said bonding factor BF_{C2} is defined by:

$$BF_{C2} = \frac{A_2(15.4) + B_2(8.6) + S_2(9.1)}{BF_{C1}\,\delta_1}$$

wherein A_2, B_2, and S_2 are the respective weight percentages of acrylonitrile, butadiene, and styrene in said normally incompatible ABS polymer, and BF_{C1} and δ_1 are as defined above, and having further a melt viscosity under extrusion conditions of between about 50 to 150 percent of the melt viscosities of each of said styrene polymer and said normally incompatible ABS polymer.

4,221,837

FLAME RETARDANT ARTICLE

Richard R. Nicholson, Ann Arbor, Mich.; Ray E. Smith, Lake Buena Vista, Fla., and Jayendra G. Shukla, Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

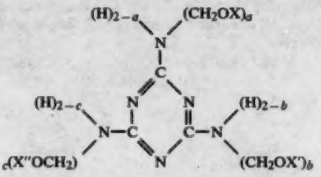
Continuation-in-part of Ser. No. 966,931, Dec. 6, 1978. This application Sep. 17, 1979, Ser. No. 75,863

Int. Cl.[3] **C09D** *5/18;* **D04H** *1/58*

U.S. Cl. 428—288 **10 Claims**

1. A flame retardant article comprising an article treated with a flame-retardingly effective amount of an intumescent composition comprising a cyclic nitrogen compound, a phosphorus polyol, a phosphorus acid, and water, wherein:

(a) said nitrogen compound is

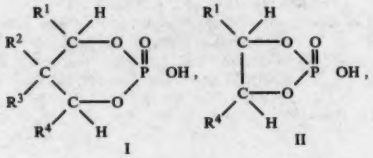


wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$, provided that at least one of said X, X', and X'' groups is $-CH_3$;

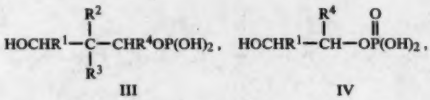
(b) said phosphorus polyol is the reaction product of the reaction of:

1. A member selected from the group consisting of phosphorous acid, phosphoric acid, phosphonic acids, pyrophosphoric acid, diphosphoric acid, diphosphinic acids, monoesters of phosphoric acid, monoesters of polyphosphoric acid, monoesters of diphosphoric acid, diesters of diphosphoric acid, diesters of diphosphinic acid, diesters of diphosphonic acids, diesters of pyrophosphoric acid, and mixtures thereof; and
2. An oxide selected from the group consisting of alkylene oxides, alkylene dioxides, and epihalohydrin.

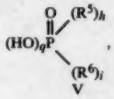
(c) said acid is selected from the group consisting of



I II

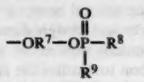


III IV



V

and mixtures thereof, wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, R^3, and R^4 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and q plus h plus i equals 3; and wherein R^5 and R^6 are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



wherein R^7 is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^8 and R^9 are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkylenoxy of from about 2 to about 6 carbon atoms, and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^5 and R^6 groups does not exceed about 8.

4,221,838

CRIMPED THERMOPLASTIC FIBERS

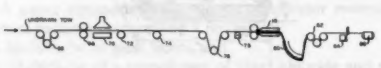
James K. Hughes, Bartlesville, Okla., and Wayne K. Erickson, Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 607,972, Aug. 26, 1975, Pat. No. 4,040,155, which is a division of Ser. No. 319,136, Dec. 29, 1972, Pat. No. 3,911,539. This application May 25, 1977, Ser. No. 800,364

The portion of the term of this patent subsequent to Oct. 14, 1992, has been disclaimed.

Int. Cl.[2] D02G *3/32, 1/12, 1/20*

U.S. Cl. 428—369 **11 Claims**



1. A crimped product made by a method of crimping synthetic thermoplastic fibers having a drawn denier within the range of from 1.5 to about 80 dpf, to produce crimped fibers having an improved crimp recovery, which method comprises crimping said fibers in the presence of steam by passing same under crimping conditions through a crimping zone comprising a defined first region of low but increasing steam pressure which increases over said first region from substantially atmospheric pressure to a value within the range of 5 to about 35 psig, a defined second region of relatively high and substantially constant steam pressure within the range of from 5 to about 35 psig, and a defined third region of decreasing steam pressure which decreases in said third region from a value within the range of from 5 to about 35 psig to substantially atmospheric pressure, and recovering essentially uniformly crimped fibers having a crimp frequency within the range of from 5 to 15 crimps per inch and a crimp recovery of at least about 12.5 percent, wherein said percent crimp recovery is expressed by the formula:

$$\% \text{ crimp recovery} = \frac{L_2 - L_3}{L_2} \times 100,$$

where L_2 is the length of said fibers after being subjected to a weight of 0.1 gram per denier for 11 minutes and L_3 is the length of said fibers after relaxing said fibers for 3 minutes following the measurement of L_2 and subjecting said fibers to a weight of 0.001 gram per denier for 1 minute.

7. A product comprising essentially uniformly crimped synthetic thermoplastic fibers produced by the process which comprises:

drawing said fibers;

applying a finishing agent to said drawn fibers; and

crimping said fibers in the presence of steam by passing same under crimping conditions through a crimping zone comprising a defined first region of low but increasing steam pressure, a defined second region of relatively high substantially constant steam pressure, and a defined third region of decreasing steam pressure;

said product having a crimp recovery of at least 12.5 percent, wherein said percent crimp recovery is expressed by the formula:

$$\% \text{ crimp recovery} = \frac{L_2 - L_3}{L_2} \times 100,$$

where L_2 is the length of said fibers after being subjected to a weight of 0.1 gram per denier for 11 minutes and L_3 is the length of said fibers after relaxing said fibers for 3 minutes following the measurement of L_2 and subjecting said fibers to a weight of 0.001 gram per denier for 1 minute.

4,221,839

METHOD FOR PROTECTING SURFACES AGAINST FOULING BY MARINE ORGANISMS

Aart P. de Graaf, Goes, Netherlands, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Mar. 23, 1978, Ser. No. 889,146

Claims priority, application Netherlands, Mar. 28, 1977, 7703305

Int. Cl.[2] B05D *3/02;* B32B *27/38, 27/00*

U.S. Cl. 428—413 **3 Claims**

1. A method for protecting the surfaces of objects and constructions that are exposed to salt or fresh water against growths of biological origin by applying an antifouling outer coating layer onto these surfaces, characterized in, that the coating layer is formed from a paint formulation consisting essentially of a combination of

(a) at least one water-insoluble polymeric binder selected from the group consisting of homopolymers and copolymers of acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, vinyl acetate, vinyl chloride, esters of acrylic and methacrylic acids, styrene, vinyl-isobutyl ether, epoxy and coaltar-epoxy polymers and chlorinated rubbers;

(b) at least one water-soluble polymeric binder selected from the group consisting of polymers and copolymers of vinylpyrrolidone, vinyl alcohol, ethylene oxide, propylene oxide and vinylmethyl ether; wherein said water-soluble polymeric binder constitutes from 46 to 83% of the combined weights of said water-soluble and water-insoluble polymeric binders;

(c) at least one solid toxicant of the formula $(R_1R_2R_3M)_nX$ wherein R_1, R_2 and R_3 are individually selected from the group consisting of alkyl, cycloalkyl, aryl and alkaryl groups that optionally contain at least one substituent, n represents the valence of X, X is selected from the group consisting of oxygen, sulfur, hydroxyl, sulfate, phosphate, phosphite, halide, borate, arsenate, arsenite, antimonate, carboxylate, carbamate and thiocarbamate and M is tin or lead; and

(d) at least one conventional paint additive selected from the group consisting of metal powders, metal oxides, pigments, wood rosin, plasticizers and viscosity improving agents.

4,221,840

ADHESIVE

William M. Alvino, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 735,719, Oct. 26, 1976, abandoned. This application Feb. 10, 1978, Ser. No. 876,818

Int. Cl.[2] C08L *75/00*

U.S. Cl. 428—423.5 **22 Claims**

1. An A-staged reaction product made by reacting to the A-stage by heating at about 60° C. for about ¼ to about 1 hour followed by heating at about 120° C. until the viscosity is less than 8 secons measured in a 62 mm×4 mm I.D. flow tube at 120° C.,

(A) hydroxy terminated 1,2-polybutadiene; and

(B) about a stoichiometric equivalent to react with the hydroxy functionality of said hydroxy terminated 1,2-polybutadiene up to about 20 meq in excess of said stoichiometric equivalent, of a diisocyanate having the general formula

OCH—R—NCO

where R is a divalent aromatic or aliphatic radical; and

(C) a vinyl compound selected from the group consisting of styrene, vinyl toluene, and mixtures thereof in a ratio of about 1.0 to about 2 parts by weight per each part by weight of said hydroxy terminated 1,2-polybutadiene, said A-staged reaction product being free of any free-radical catalyst.

4,221,841

LAMINATED MATERIAL FOR PACKAGING FILM

Nobuyuki Hisazumi; Masataka Yamamoto, and Tsutomu Uehara, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 940,118

Claims priority, application Japan, Sep. 13, 1977, 52-109431

Int. Cl.[2] B32B *27/18, 27/22, 27/30*

U.S. Cl. 428—497 **14 Claims**

1. A laminated material having high workability and gas-impermeability, said laminate material being prepared by laminating a layer of vinylidene chloride copolymer containing 3 to 10% by weight of a plasticizer having a number average molecular weight of less than 500 with a carrier layer of synthetic resin containing 5 to 70% by weight of at least one organic additive having an average molecular weight in the range of from 800 to 10,000, and being a functional oligomer, fat, oil, or rosin.

4,221,842

SNACK FOOD PROCESS

John G. Toft, Leicester, England, assignor to Standard Brands Incorporated, Wilton, Conn.

Continuation of Ser. No. 793,990, May 5, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,587

Claims priority, application United Kingdom, May 6, 1976, 18533/76; Feb. 18, 1977, 7046/77

Int. Cl.[2] A23L *1/216, 1/01*

U.S. Cl. 426—550 **10 Claims**

1. A process for preparing a snack food comprising the sequential steps of:

(a) preparing a dough comprising potato solids having present substantially intact potato cells, moisture, farinaceous material and a binder;

(b) equilibrating the dough for a period sufficient to permit the dough ingredients to be substantially penetrated by the moisture;

(c) passing the equilibrated dough through a cooking and forming extruder having two cooking zones, the temperature of the first zone being sufficient to heat the dough to a temperature of from about 100° to about 125° C. and the temperature of the second zone being sufficient to heat the dough to a temperature of from about 70° to about 100° C. the temperature of the first zone being higher than the temperature of the second zone;

(d) extruding the cooked dough directly from the second zone into a continuous ribbon;

(e) cooling the ribbon to harden the surface thereof;

(f) dividing the hardened ribbon into pieces;

(g) conditioning the pieces by maintaining the same at a relative humidity of from about 10 to about 50 percent and a temperature of from about 15° to about 27° C. for a period of from about 10 to about 48 hours until the moisture content of said pieces is in the range of from about 9 to about 13 percent, based on the weight of the pieces such that the pieces lose moisture at a controlled and even rate, and

(h) frying the conditioned pieces having a moisture of about 9 to about 13 percent.

4,221,843

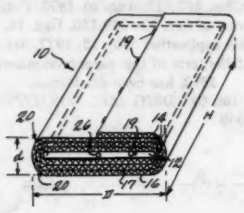
CONSTRUCTION OF ELLIPTICAL METAL SUBSTRATES

Joseph Mundy, Malvern, Pa., assignor to Matthey Bishop, Inc., Malvern, Pa.

Filed Jun. 26, 1978, Ser. No. 918,957

Int. Cl.[2] H04R *31/00*

U.S. Cl. 428—594 **7 Claims**



1. A generally elliptical cylindrical metal substrate having a major diameter D, minor diameter d, and depth H, comprising

a plate having a generally rectangular cross section of length L and thickness T, and a depth approximately H, located at the center of said substrate and extending between and terminating substantially at the foci of said elliptical cylindrical metal substrate,

a plurality of wrappings of metal substrate material disposed around said plate and having a substantially uniform thickness X, and

means for maintaining said wrappings and plate integral.

4,221,844

DECORATIVE COATING OF METAL

James A. Hasenour, 821 Church Ave., Jasper, Ind. 47546

Continuation-in-part of Ser. No. 815,104, Jul. 13, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,961

Int. Cl.[3] B32B *15/18*

U.S. Cl. 428—623 **2 Claims**

1. In tables and chairs of the type utilizing visible chromium plated steel framework, the improvement which comprises a layout composition in a preselected color disposed on said framework prior to assembly and presenting a finished surface brightness equivalent to that of the covered chromium plated steel but in said preselected color.

4,221,845

PROCESS FOR PRETREATMENT OF LIGHT METALS BEFORE GALVANIZATION

Wolfgang Koehler, Alzenau, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Feb. 14, 1979, Ser. No. 12,135

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2809444

Int. Cl.[3] C23C *15/00*; C25D *5/42*

U.S. Cl. 428—670 51 Claims

1. A light metal having a surface suitable for galvanization in aqueous solution and having on said surface to improve the adherence to metal overcoats a coating of palladium alloy containing 20 to 70 weight % of a member of the group consisting of nickel, cobalt, iron and mixtures thereof.

4,221,846

BATTERY SEPARATOR

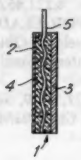
William A. Armstrong, and James A. Wheat, both of Ottawa, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Feb. 2, 1979, Ser. No. 9,090

Claims priority, application Canada, Mar. 23, 1978, 299604

Int. Cl.[2] H01M *4/00*

U.S. Cl. 429—29 12 Claims



1. A paper composition for use as a separator material in electrical batteries, comprising a mixture of

(a) 30–50%/w of glass fibers, and

(b) 70–50%/w of a co-polymer of vinyl chloride and vinyl acetate.

8. In a reserve primary zinc/air electrical battery, said battery comprising a series of electrically connected electrochemical cells, said cells including a zinc anode, an air cathode, a separator for said anode and cathode and an alkaline electrolyte, the improvement comprising said separator being made of a paper composition comprising a mixture of

(a) 30–50%/w of glass fibers, and

(b) 70–50%/w of a co-polymer of vinyl chloride and vinyl acetate.

4,221,847

METHOD AND APPARATUS FOR STORAGE BATTERY ELECTROLYTE CIRCULATION

Mark S. Inkmann, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Sep. 4, 1979, Ser. No. 72,097

Int. Cl.[2] H01M *2/40*

U.S. Cl. 429—70 10 Claims

1. An apparatus for circulating the liquid electrolyte within the cell of a storage battery, said apparatus comprising:

(1) an electrolyte reservoir isolated from the cell and havine a first electrolyte level corresponding to the normal level of electrolyte in the cell;

(2) inlet means for admitting electrolyte from the lower portion of the cell into the reservoir;

(3) outlet means for directing a flow of electrolyte to the upper portion of the cell from the reservoir;

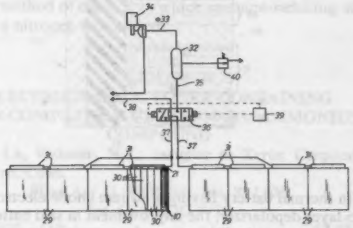
(4) fluid communication means operatively connecting the inlet and outlet means to the reservoir below the first electrolyte level;

(5) a gas port in the reservoir above the first electrolyte level;

(6) a source of pressurized gas in communication with the gas port; and,

(7) means for periodically applying the pressurized gas to the surface of the electrolyte in the reservoir at a volume sufficient to lower the surface to a second electrolyte level above the fluid communication means and to cause at least a part of the electrolyte in the reservoir to flow through the outlet means.

10. A method for circulating the liquid electrolyte within the cell of a storage battery comprising the steps of:



(1) providing a separate electrolyte reservoir in communication with the cell and having a first electrolyte level corresponding to the level of electrolyte in the cell;

(2) pressurizing the reservoir above the electrolyte with a pulse of pressurized gas to cause a flow of electrolyte from the reservoir;

(3) directing at least a part of the flow of pressurized electrolyte from the reservoir to the upper portion of the cell;

(4) controlling the duration of the pulse of pressurized gas to prevent the flow of gas from the reservoir to the cell;

(5) relieving the gas pressure in the reservoir; and,

(6) admitting electrolyte into the reservoir from the lower portion of the cell under the influence of the differential pressure head of the electrolyte in the cell and reservoir.

4,221,848

ELECTROCHEMICAL STORAGE CELL OR BATTERY OF THE ALKALI METAL AND SULFUR TYPE

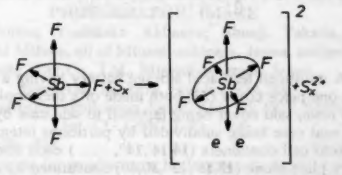
Gert Weddigen, Heidelberg-Neuenheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim-Kägertal, Fed. Rep. of Germany

Filed Nov. 22, 1977, Ser. No. 853,842

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2653966

Int. Cl.[2] H01M *6/18*

U.S. Cl. 429—104 1 Claim



1. In an electrochemical storage cell or battery with at least one anode chamber containing alkali metal as the anolyte and at least one cathode chamber containing a sulfur-containing catholyte substance, with the anode chamber and the cathode chamber separated from each other by an ion-conducting solid

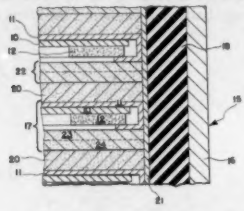
electrolyte, the improvement which comprises the addition in the cathode chamber of TaF_5.

4,221,849

IRON-LITHIUM ANODE FOR THERMAL BATTERIES AND THERMAL BATTERIES MADE THEREFROM

David E. Harney, Sparks, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Apr. 27, 1979, Ser. No. 33,904
Int. Cl.[2] H01M 6/36
U.S. Cl. 429—112 12 Claims



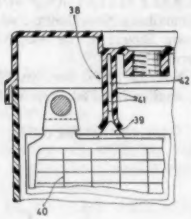
6. In thermal battery having a lithium anode electrolyte and a two-layer depolarizer, the improvement in said battery comprising a composite lithium anode consisting essentially of lithium and from 70 to 85% by weight particulate metal wettable by molten lithium, but only slightly or not at all alloyable with said lithium.

4,221,850

STORAGE BATTERY WITH THERMOPLASTIC CASING HAVING INTERNAL MEMBERS FOR IMMOBILIZING THE BATTERY PLATES

Manfred Attinger, Hildesheim; Gert Niemann, Nordstemmen; Lothar Makkens, Sachsenheim; Werner Eisenacher, Nordstemmen, and Fritz Frauböse, Hildesheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,380
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555009; Jul. 17, 1976, 2632308
Int. Cl.[3] H01M 2/02
U.S. Cl. 429—160 7 Claims



1. A multi-cell lead-acid storage battery having a case (35) and a one-piece cover (32) both made of a thermoplastic synthetic resin, said cover being fastened to said case by a fusion joint, said case being subdivided by partitions integral therewith into cell containers (14,14',14", . . .) each containing a battery plate block (15,15',15",30,40) constituted by an assembly of electrode plates and plate separators equipped with pole bridges (16,16') respectively connecting together the plates of the same polarity of a cell, the pole bridges of the several cells being further interconnected to constitute a battery electrically, and terminals being provided for external connection, wherein, for improvement of the battery:

at least one downwardly extending member (38,41) of said cover is of a cross-section providing forked extremities, said forked extremities embracing and bearing against bulging portions (39) of one or more of said electrode plates and being deformed thereby, for restriction of movement of said plate block in said casing, said bulging portions (39) of said plates being provided on electrode plate edges which are the nearest to said cover (32) of the edges of one or more of said electrode plates (N",P") and extending towards said cover to a height at least equal to that of the adjacent aforesaid separators (S).

4,221,851

STABLE ELECTROLYTE FOR LITHIUM BATTERIES

Matthew J. Faust, Norristown, and James R. Picozzi, Hatfield, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 3, 1978, Ser. No. 921,381
Int. Cl.[3] H01M 6/14
U.S. Cl. 429—197 6 Claims

1. A stable electrolyte composition for use in lithium electrochemical cells, comprising:

An electrolyte quantity of lithium hexafluroarsenate dissolved in methyl formate;

A stabilizing amount of lithium tetrafluroborate admixed with said electrolytes; and

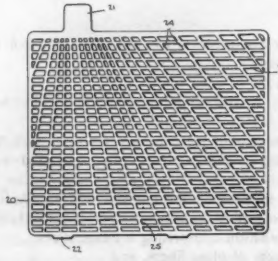
A stabilizing amount of a lithium alloy.

4,221,852

RADIAL GRIDS FOR LEAD ACID BATTERIES

Nawaz M. Qureshi, Cleveland, Ohio, assignor to ESB United States, Inc. and ESB International Corp., both of Wilmington, Del.

Filed May 21, 1979, Ser. No. 40,755
Int. Cl.[2] H01M 4/73
U.S. Cl. 429—211 8 Claims



1. A storage battery grid which can be produced by casting lead or a lead alloy into an appropriate mold and which comprises:

(I) a generally rectangular frame consisting of opposed first and second edge members which constitute respectively upper and lower edges of said grid when used in a battery, and opposed third and fourth edge members which constitute side edges of said grid when used in a battery;

(II) a lug integrally formed on said first member at a location intermediate the midpoint of said first member and the common corner of said first and third members;

(III) a first plurality of wires parallel to one another and connecting one of said third and fourth members to the other of said third and fourth members or to one of said first and second members; and

(IV) a second plurality of wires constituting an array of arms connected to said first member and diverging from one another such that said first member is connected to each of said second, third and fourth members by at least one of said arms.

4,221,853

DRY ELECTRIC CELLS

Frank L. Tye, Pinner; John E. A. Shaw, and Andrzej K. Agopsowicz, both of London, all of England, assignors to Berec Group Limited, London, England

Filed Feb. 26, 1979, Ser. No. 15,141

Claims priority, application United Kingdom, Mar. 2, 1978, 8356/78

Int. Cl.[2] H01M 4/50

U.S. Cl. 429—224 6 Claims

1. A dry electric cell of the Leclanché type having a cathode mix which, prior to discharge, includes (i) MnO_2 having a β-crystal structure, and (ii) hetaerolite ($ZnO.Mn_2O_3$).

4,221,854

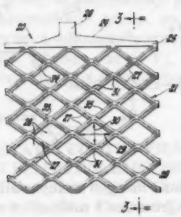
LIGHTWEIGHT LAMINATED GRID FOR LEAD-ACID STORAGE BATTERIES

Richard H. Hammar, Fraser, and Douglas J. Harvey, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1979, Ser. No. 10,898

Int. Cl.[2] H01M 4/72

U.S. Cl. 429—234 5 Claims



1. A lightweight grid for a lead-sulfuric acid type storage battery, said grid having a laminated reticulated open mesh portion for retaining chemically active lead-based paste material, said laminated portion comprising:

a support layer of a plastic material chemically compatible with the battery environment;

an electrically conductive foil layer coextensive with a face of said support layer, said foil being formed of a composition selected from the group consisting of lead and lead alloys and said foil layer being adapted for contact with a said paste material; and

a sulfuric acid resistant adhesive bonding layer between said support and foil layers.

4,221,855

ELECTROPHOTOGRAPHIC PLATE PRODUCED BY FIRING GLASS BINDER CONTAINING INORGANIC PHOTOCONDUCTOR AND HIGH MELTING POINT INORGANIC ADDITIVE IN NON-REDUCING ATMOSPHERE

Daisuke Manabe; Shuji Asai, and Michihisa Suga, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 727,664, Sep. 29, 1976, abandoned. This application Jun. 30, 1978, Ser. No. 920,709

Claims priority, application Japan, Oct. 2, 1975, 50-119246

Int. Cl.[2] G03G 5/04

U.S. Cl. 430—56 7 Claims

1. A method of producing an electrophotographic plate comprising the steps of forming a mixture, in powder form, of a photoconductive material, a solvent for said photoconductive material, an activator suitable for promoting photoconductivity in said photoconductive material, said photoconductive material being selected from the group consisting of sulphides, tellurides, selenides, and sulphoselenides of at least one of zinc and cadmium, a glass binder material having a softening temperature below a firing temperature ranging from about 500° C. to 700° C., and a solid inorganic electrically nonconductive material having a softening temperature higher than said firing temperature, said solid inorganic material being at least one selected from the group consisting of silicon dioxide, aluminum oxide, magnesium oxide, beryllium oxide, calcium oxide, cerium oxide, titanium oxide and borosilicate glass, applying said mixture on an optically transparent electrically conductive substrate, and firing said mixture under a nonreducing atmosphere at said firing temperature ranging from about 500° C. to 700° C., the temperature selected being higher than the softening temperature of said glass binder material and lower than the softening temperature of said inorganic material for a time sufficient for said glass binder to be fused to form a plate in which said solid inorganic material and said photoconductive material are dispersed within the fused glass binder.

7. The method of claim 1, in which said non-reducing atmosphere is a nitrogen atmosphere.

4,221,856

ELECTROGRAPHIC TONER CONTAINING RESIN-COMPATIBLE QUATERNARY AMMONIUM COMPOUND

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1978, Ser. No. 892,635

Int. Cl.[3] G03G 9/10

U.S. Cl. 430—110 17 Claims

1. A developer composition comprised of a carrier, toner resin, and a pigment which is coated with from about 0.1 to about 10 percent of a quaternary ammonium compound thereby causing the toner to become positively charged said quaternary ammonium compound being of the formula:

in which at least two R radicals are hydrocarbon radicals having from about 8 to about 22 carbon atoms and each other R is selected from hydrogen and hydrocarbon radicals having from 1 to about 8 carbon atoms, and A is an anion selected from sulphate, sulphonate, nitrate, borate, chlorate, chloride, iodide, and bromide.

13. A developer composition comprised of about 3 parts by weight of toner comprising about 10 percent of carbon black containing a coating of distearyl dimethyl ammonium chloride in an amount of from 0.5 percent to 1 percent and a copolymer of styrene/n-butylmethacrylate resin, in an amount of from 85 percent to 90 percent, and 100 parts per weight of a steel carrier coated with vinylidene fluoride.

4,221,857

PROCESS FOR PRODUCING A HIGH CONTRAST PHOTOGRAPHIC IMAGE

Elichi Okutsu; Yoshitaka Akimura; Shunji Takada, and Hiroyuki Mifune, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 18, 1978, Ser. No. 934,785

Claims priority, application Japan, Aug. 30, 1977, 52/104012

Int. Cl.[2] G03C 5/30, 1/06

U.S. Cl. 430—264 12 Claims

1. A process for producing a high contrast negative photographic image comprising developing an image-wise exposed silver halide photographic light-sensitive material with a developer containing (a) free sulfite ion in a concentration of at least 0.18 mol/l and (b) a dihydroxybenzene as the sole developing agent in the presence of at least one polyalkylene oxide having a molecular weight of at least 600 or a derivative thereof wherein said polyalkylene oxide is contained in said

light-sensitive material or in said developer and wherein said silver halide photographic light-sensitive material comprises a support having thereon at least one silver halide emulsion layer and wherein the light-sensitive material or said developer contains at least one compound represented by the following general formula (I):

$$R^1NHNHCOR^2 \quad (I)$$

wherein R^1 represents an aryl group; R^2 represents a hydrogen atom, a phenyl group or an unsubstituted alkyl group having 1 to 3 carbon atoms in an amount of about 10^{-3} to 10^{-1} mol/mol of Ag and the silver halide is selected from the group consisting of silver chloride, silver chlorobromide, silver bromide, silver iodobromide and silver iodochlorobromide and the average grain size of said silver halide is about 0.7 micron or less.

4,221,858

PROCESS FOR PREPARING A PLANOGRAPHIC PRINTING PLATE

Keisuke Shiba, and Kesanao Kobayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation-in-part of Ser. No. 807,612, Jun. 17, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,498
Claims priority, application Japan, Jun. 18, 1976, 51-71546
Int. Cl.² G03C 5/00; G03F 7/02
U.S. Cl. 430—266 **20 Claims**

1. In a process for preparing a planographic printing plate which comprises imagewise exposing a silver halide photosensitive material comprising a support having a hydrophilic surface having thereon a tanning-developable silver halide photosensitive layer; tanning developing the exposed photosensitive material and wasing out the untanned areas of the photosensitive layer to reveal the hydrophilic surface thereby to obtain the planographic printing plate; the improvement comprising the silver halide photosensitive layer further contains finely divided particles of an oleophilic synthetic resin in which the particles are substantially insoluble in water, are non-permeable to an alkaline solution and are not dissolved during the tanning development, and said oleophilic synthetic resin exhibits a positive difference in contact angle θ where $\theta =]\theta o/w - \theta w/o[$ in which $\theta o/w$ is the contact angle of kerosine in water, and $\theta w/o$ is the contact angle of water in kerosine.

4,221,859

PHOTOPOLYMERIZABLE COMPOSITION WITH OXALIC ACID PHOTOINITIATOR

Gene O. Fanger, Muncie, and George W. Brutchen, Winchester, both of Ind., assignors to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 540,486, Jan. 13, 1975, abandoned. This application May 4, 1976, Ser. No. 683,439
Int. Cl.² G03C 1/68
U.S. Cl. 430—285 **9 Claims**

1. A photopolymerizable composition consisting of an aqueous mixture of a water-insoluble resin, a water-soluble binder, a crosslinking agent, and a photopolymerization initiator selected from the group consisting of oxalic acid, sodium oxalate, potassium oxalate, lithium oxalate and urea oxalate.

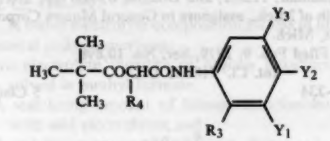
4,221,860

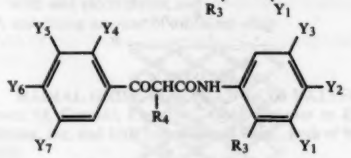
PROCESS FOR FORMING COLOR PHOTOGRAPHIC IMAGES

Takeshi Hirose, and Akia Okumura, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

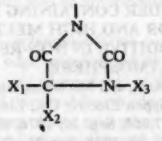
Continuation-in-part of Ser. No. 732,839, Oct. 18, 1976, abandoned. This application May 20, 1977, Ser. No. 799,036
Claims priority, application Japan, Oct. 20, 1975, 50-126139
Int. Cl.² G03C 7/16
U.S. Cl. 430—379 **24 Claims**

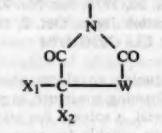
1. A process for forming color photographic images which comprises applying, after image-wise exposure, a color reversal processing including the step of performing color development in the presence of a competing coupler selected from the group consisting of citrazinic acid, 3,5-dihydroxybenzoic acid, 2,6-dihydroxyisonicotinate, 2,6-dihydroxyisonicotinamide or methyl 3,5-dihydroxybenzoate to a reversal color photographic material comprising a support having coated thereon at least three differently sensitive photographic silver halide emulsion layers, the outermost layer of said color photographic material being blue-sensitive and containing at least one nondiffusible coupler capable of forming a yellow dye by undergoing a coupling reaction with an oxidized primary aromatic amino color developing agent and represented by following general formula (II) or (III)

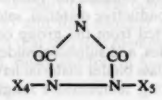

(II)


(III)

where R_3 represents a halogen atom, an alkyl group, an alkoxy group, an aryloxy group, or a substituted amino group; Y_1, Y_2 and Y_3; which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryl group, an arylamino group, an acylamino group, an alkylsulfonamido group having 8 to 30 carbon atoms, an alkylaminosulfo group having 8 to 30 carbon atoms, a carboxy group, a sulfo group, a cyano group or a hydroxy group; Y_4, Y_5, Y_6 and Y_7, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, an amino group, an alkylsulfonamido group having 8 to 30 carbon atoms, an alkylaminosulfo group having 8 to 30 carbon atoms or an acylamino group; and R_4 represents a group represented by the general formula (IV), (V), (VI) or (VII)


(IV),


(V),


(VI),

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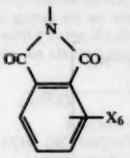
(VII)



wherein X_1 and X_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group or a hydroxy group; X_3, X_4 and X_5, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, or an acyl group; W represents an oxygen atom or a sulfur atom; and X_6 represents a hydrogen atom, a halogen atom, a nitro group, a cyano group, a thiocyano group, a hydroxy group, an alkoxy group, an aryloxy group, an acyloxy group, an alkyl group, an alkenyl group, an aryl group, an amino group, a carboxy group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an acylamino group, an imido group, a sulfo group, an alkylsulfonyl group, an arylsulfonyl group, an alkoxysulfonyl group, an aryloxysulfonyl group, a sulfamoyl group, a sulfonamido group, a ureido group or a thioureido group, wherein one of Y_1, Y_2 and Y_3 is an alkylsulfonamido group having 8 to 30 carbon atoms.

4,221,861

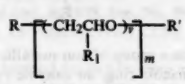
BACKSIDE ANTISTATIC COATED FILM BEARING A LIGHT SENSITIVE EMULSION

Paula R. Norman, Midland, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 6, 1978, Ser. No. 893,849
Int. Cl.[2] G03C *1/78, 1/96*
U.S. Cl. 430—529 **11 Claims**

1. In a process for preparing a film bearing a light sensitive emulsion on one face thereof, the opposite face of which is treated with a topical antistatic agent to reduce the tendency of said opposite face to accumulate an electrostatic charge, the improvement of:

(a) applying to said opposite face, in an amount sufficient to reduce its surface resistivity, a photographically inert compound represented by the formula:



wherein R is the residue left by removal of m active hydrogen atoms from an initiator compound $R(H)_m$; m is an integer from 1 to 8; R' is hydrogen or the acyl radical of a carboxylic acid or the carbamoyl radical of a hydrocarbyl isocyanate comprising from 1 to about 20 carbon atoms; R_1 each occurrence is independently H, CH_3, C_2H_5, t-butoxymethyl or—CH_2OX wherein X is selected from H and the acyl radical of a carboxylic acid or the carbamoyl radical of a hydrocarbyl isocyanate comprising 1 to about 20 carbon atoms; v is a positive number such that the product of v and m is a number whereby the resultant molecular weight of said photographically inert compound is about 1,000 to about 6,000; provided that in about 70 to about 95 percent of its occurrences R_1 is hydrogen, in about 5 to about 10 percent of its occurrences R_1 is—CH_2OX wherein X is H or Y, which Y is the acyl radical of an α,β-unsaturated monocarboxylic acid comprising 3 to 10 carbon atoms; and in at least one occurrence X is Y and in no more than 2 occurrences is X the carbamoyl radical of a hydrocarbyl isocyanate or the acyl radical of a carboxylic acid other than Y; and

(b) exposing the photographically inert compound to a free-radical source sufficient to render it durably attached to said opposite face by curing the unsaturated portions thereof.

4,221,862

METHOD OF PRODUCING FINELY DIVIDED POLYMER PARTICLES

Kenji Naito; Keitaro Ohe, both of Odawara, and Nobuo Tsuji, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 28, 1976, Ser. No. 700,364
Claims priority, application Japan, Jun. 27, 1975, 50-79892
Int. Cl.[2] G03C *1/02*
U.S. Cl. 430—536 **13 Claims**

1. A light-sensitive photographic silver halide material comprising a support, a light-sensitive silver halide emulsion layer and a top protective layer or a backing layer containing therein finely divided, spherically shaped, homogeneous, polymer material consisting essentially of 1 or more polymers which has a high degree of uniformity in shape and particle size, and having an average particle size of from 1 to 10 microns, said particles produced by a method which consists essentially of

(a) forming a polymer solution by dissolving one or more polymers comprising at least 50 weight % of a monomer selected from the group consisting of styrene, o- and p-chlorostyrene, vinyl toluene, α-methylstyrene, acrylic esters, methacrylic esters, acrylonitrile, butadiene, isoprene and vinyl acetate in a halogenated aliphatic hydrocarbon solvent which is insoluble in or substantially immiscible with water, and which has a lower boiling point than water or which forms an azeotropic mixture with water having a lower boiling point than water,

(b) separately dissolving gelatin, a gelatin derivative, casein or a protein compound which is an amphoteric polymeric electrolyte which forms a hydrophilic colloid in water as a dispersion stabilizer in water and an anionic surface active agent having a SO_3M group wherein M represents an alkali metal or ammonium, as a dispersion aid in water,

(c) combining the two solutions of step (b) to form an aqueous medium,

(d) dispersing said polymer solution in the aqueous medium in droplet form, the viscosities of the aqueous medium and of the polymer solution and the surface tension between the aqueous medium and the polymer solution being controlled, whereby the polymer solution is dispersed as oil droplets in the aqueous medium, and

(e) then removing the solvent from each droplet, whereby the oil droplets are converted to solid particles having an average particle size of about 1 to 10 microns which particles will not change in shape or dimension after the conversion.

4,221,863

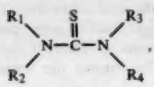
FORMATION OF SILVER HALIDE GRAINS IN THE PRESENCE OF THIOUREAS

Joseph D. Overman, and Joseph J. Sheeto, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1978, Ser. No. 892,395
Int. Cl.[2] G03C *1/02*
U.S. Cl. 430—567 **15 Claims**

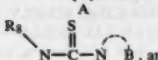
1. In a process for the preparation of a monodisperse photographic silver halide emulsion wherein silver halide grains are precipitated in a protective colloid by the reaction of a solution containing silver ions with a solution containing halide ions, the improvement comprising the steps of

(1) forming the silver halide grains in the presence of a thiourea derivative having one of the formulae:

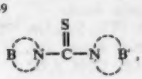


I

II



III



IV

wherein:

R_1, R_2, R_3 and R_4 are each selected from the group consisting of C_1-C_6 alkyl groups and C_1-C_6 substituted alkyl groups, provided, however, that (a) when any one of them has 5 or 6 carbon atoms, none of the others has more than 2 carbon atoms, and (b) when any two of them have 4 carbon atoms, none of the others has more than 2 carbon atoms;

R_5 and R_6 are each selected from the group consisting of H, a C_1-C_4 alkyl group, and a C_1-C_4 substituted alkyl group;

A is $—CH_2—X—CH_2—$;

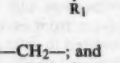
X is a member selected from the group consisting of a carbon-carbon bond, $—CH_2—$, $—CH_2CH_2—$,

and —O—;

R_7 is a member selected from the group consisting of hydrogen, an alkyl group having 1 to 12 carbon atoms, a cycloalkyl group having 5 or 6 carbon atoms, and —O—;

R_8 and R_9 are each selected from the group consisting of C_1-C_3 alkyl groups, and C_1-C_3 substituted alkyl groups; B and B′ each have the formula $—CH_2—Y—CH_2—$, provided, however, that when one of B or B′ contains an oxygen atom in its ring, the other may not; and wherein

Y is a member selected from the group consisting of a carbon-carbon bond, $—(CH_2)_n—$ where n is 1 to 3,



and $—CH_2—O—CH_2—$; and

(2) subsequently washing the emulsion to remove any remaining thiourea derivative.

4,221,864

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Tateshi Iytaka; Syunji Matsuo; Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

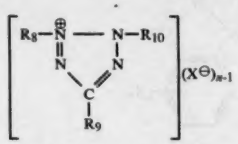
Continuation of Ser. No. 871,399, Jan. 23, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,689

Claims priority, application Japan, Feb. 1, 1977, 52-9924

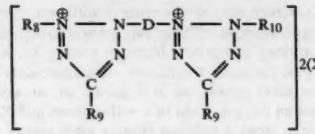
Int. Cl.[2] **G03C** *1/28, 1/08*

U.S. Cl. 430—572 **12 Claims**

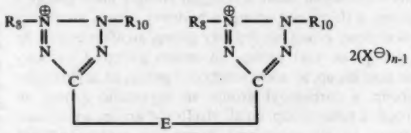
1. A high-contrast light-sensitive silver halide photographic material which comprises a support and (i) at least one light-sensitive silver halide emulsion layer containing silver halide and (ii) another hydrophilic colloidal layer coated on the support, at least one of said silver halide emulsion layer and another hydrophilic colloidal layer contains at least one tetrazolium salt selected from those of the general formula VI, VII and VIII



VI



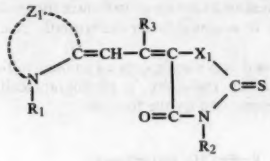
VII



VIII

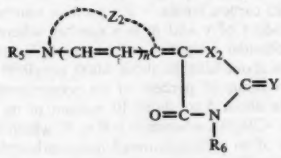
wherein R_8 and R_{10} individually represent an alkyl group, an alkenyl group, an aryl group or a heterocyclic group or they may be a group capable of forming a metal chelate or complex; R_9 represents a hydroxy, carboxyl or a salt thereof, an alkoxycarbonyl group, a group of $—SR_{11}$ in which R_{11} is a hydrogen atom, an alkyl group or an aryl group, nitro, a hydrogen atom, an amino group, an alkyl group, an alkenyl group or an aryl group; D represents a divalent aromatic group; E represents an alkylene group, an arylene group or an aralkylene group; $X^{\ominus}$ represents an anion, n is 1 or 2, provided that said salt forms an intramolecular salt when n is 1

said at least one silver halide emulsion layer contains (iii) at least one dye of the general formula I and (iv) at least one dye of the general formula II, which follow



I

wherein Z_1 represents a group of non-metallic atoms forming a thiazole ring, a selenazole ring, an oxazole ring, an imidazole ring, a benzthiazole ring, a benzselenazole ring, a benzoxazole ring, a benzimidazole ring, a naphthothiazole ring, a naphthoselenazole ring, a naphthoxazole ring or a naphthoimidazole ring; X_1 represents an oxygen atom, a sulfur atom, a selenium atom or a group of $N—R_4$ in which R_4 is a lower alkyl group, an alkenyl group or an aryl group; R_1 and R_2 individually represent a lower alkyl group, an alkenyl or an aryl group; and R_3 represents a hydrogen atom, a lower alkyl group, an alkenyl group or an aryl group; and



II

wherein Z_2 represents a group of non-metallic atoms forming a

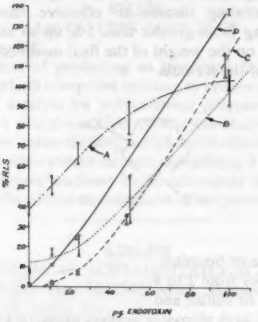
5- or 6-membered heterocyclic ring optionally having a substituent; X_2 represents an oxygen atom, a sulfur atom, a selenium atom or a group of N—R_7 in which R_7 represents a lower alkyl group, an alkenyl group or an aryl group; Y represents an oxygen atom or a sulfur atom; R_5 and R_6 individually represent a lower alkyl group, an alkenyl group or an aryl group; and n is 0 or 1.

4,221,865

METHOD FOR DETERMINING ENDOTOXIN CONCENTRATION

John A. Dubczak, Chicago, and Marlys E. Weary, Mount Prospect, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 6, 1978, Ser. No. 949,293
Int. Cl.[3] G01N *21/47*; C12Q *1/00*
U.S. Cl. 435—4 **31 Claims**



1. In an optical method for determining endotoxin wherein a sample thought to contain endotoxin is contacted with an endotoxin-coagulable protein from Limulus amebocytes to form a reaction product which contains coagulated protein, the improvement comprising contacting the reaction product with a sufficient amount of an ionic surface active suspending agent to dissolve said coagulated protein.

4,221,866

METHOD FOR DETERMINING ENDOTOXIN CONCENTRATION

Richard Cotter, Libertyville, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 6, 1978, Ser. No. 949,292
Int. Cl.[3] G01N *21/47*; C12Q *1/00*
U.S. Cl. 435—4 **15 Claims**

1. In an optical method for determining endotoxin wherein a sample thought to contain endotoxin is contacted with an endotoxin-coagulable protein from Limulus amebocytes to form a reaction product which contains coagulated protein, and then the light scattering or absorbence of a suspension of such reaction product determined, the improvement comprising contacting the reaction product with a sufficient amount of monofunctional ionic detergent to dissolve said coagulated protein, with the proviso that the reaction product is not contacted with a suspending agent.

4,221,867

OPTICAL MICROBIOLOGICAL TESTING APPARATUS AND METHOD

Francis J. McFadden, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

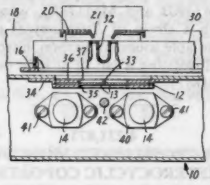
Filed Feb. 2, 1979, Ser. No. 8,933
Int. Cl.[2] C12Q *1/18*
U.S. Cl. 435—32 **13 Claims**

1. A device for determining the minimum concentration of antibiotic necessary to inhibit the growth of microorganism in an elongate incubation well which contains the microorganism and a nutrient broth, said device comprising:

(a) a light transmissive layer

(b) a light source capable of emitting visible light on one side of said layer

(c) means for positioning an elongate incubation well containing nutrient broth, microorganism and antibiotic on the other side of said layer,



said light transmissive layer having a plurality of flat, opaque louver elements set in a transparent matrix so as to permit transmission of said visible light along lines generally parallel to said louver elements, said layer directing transmitted light to said incubation well at an intersect angle no less than about 20° with respect to the elongate axis of said incubation well.

4,221,868

PROCESS FOR PREPARING 9α-OH TESTOSTERONE

Merle G. Wovcha; Frederick J. Antosz, both of Kalamazoo; John M. Beaton, Portage; Alfred B. Garcia, Kalamazoo, and Leo A. Kominek, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 844,366, Oct. 21, 1977. This application Apr. 23, 1979, Ser. No. 32,186
Int. Cl.[3] C12P *33/18*
U.S. Cl. 435—56 **4 Claims**

1. A process for preparing 9α-OH testosterone in its essentially pure form which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Microbacterium, Nocardia, Protaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 8 to 10 carbon atoms, inclusive, and accumulate 9α-OH testosterone in the fermentation beer, in an aqueous nutrient culture medium under aerobic conditions in the presence of a steroid containing from 8 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and isolating said compound in its essentially pure form from the culture medium.

4,221,869

ENZYMATIC SYNTHESIS OF L-CARNITINE

Jean-Paul Vandecasteele, Fourqueux, and Jeannine Lemal, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 17, 1978, Ser. No. 925,356
Claims priority, application France, Jul. 18, 1977, 77 22183
Int. Cl.[2] C12P *17/00*
U.S. Cl. 435—117 **23 Claims**

1. A process for producing L-carnitine, which comprises reacting 3-dehydrocarnitine or one of its salts, in aqueous medium, simultaneously with:

(a) carnitine dehydrogenase,

(b) a coenzyme which may be utilized by carnitine dehydrogenase for reducing dehydrocarnitine, and

(c) a reducing agent for the coenzyme.

4,221,870

PROCESS FOR PRODUCING ANTIBIOTICS

Stephen J. Box, Plummers Plains, near Horsham, England, assignor to Beecham Group Limited, England

Filed Jun. 19, 1978, Ser. No. 916,768

Claims priority, application United Kingdom, Jul. 14, 1977, 29569/77

Int. Cl.[2] C12P *17/18*

U.S. Cl. 435—119 17 Claims

1. A process for the preparation of a salt at least one of MM4550A, MM13902 and MM17880, which process comprises cultivating a strain of *Streptomyces gedanensis* in the presence of assimilable souces of carbon, nitrogen, sulphur and mineral salts and isolating a salt of at least one of MM4550A, MM13902 and MM17880.

4,221,871

RETICULAR CROSSLINKED MONOVINYLIDENE N-HETEROCYCLIC COPOLYMER

Erich F. Meitzner, Glenside, and James A. Oline, Wyncote, both of Pa., assignors to Rohm and Haas Company, Philadephia, Pa.

Continuation-in-part of Ser. No. 749,526, Jul. 18, 1958. This application Dec. 16, 1970, Ser. No. 98,955

Int. Cl.[2] C08F *8/00, 126/00*

U.S. Cl. 521—29 10 Claims

1. A crosslinked copolymer of (1) a polyvinylidene monomer containing a plurality of ethylenically unsaturated groups in non-conjugated relationship and (2) at least one monovinylidene ring-containing nitrogen heterocyclic monomer selected from N-vinylpyrrolidone or monomers having the vinyl moiety attached to the heterocyclic ring at a position other than a ring nitrogen atom, said copolymer having micropores common to crosslinked copolymers, said copolymer being characterized by a reticular structure caused by the presence of microscopic channels throughout said copolymer, the apparent density of said copolymer being at least 0.02 density units less than the apparent density of a copolymer of the same composition without said reticular structure.

4,221,872

PROCESS FOR REMOVING UNSATURATION FROM ION EXCHANGE RESINS CONTAINING UNQUATERNIZED AMINO GROUPS BY HYDROGENATION WITH IMINE

Jack Lydiate, East Rosanna, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed Nov. 20, 1978, Ser. No. 962,481

Claims priority, application Australia, Nov. 28, 1977, PD2586

Int. Cl.[2] C08L *23/26;* C08F *8/04, 26/00*

U.S. Cl. 521—32 18 Claims

1. A process for the manufacture of an ion-exchange resin by hydrogenating an ion-exchange resin comprising unquaternized amino groups and unsaturated olefinic bonds wherein said polymeric resin is reacted in a liquid reaction medium with diimine.

4,221,873

METHOD FOR PRODUCING PHENOL FOAM PLASTIC

Leonid V. Volodko, ulitsa Chervyakova, 4,kv.99; Mikhail A. Ksenofontov, ulitsa Korzhenevskogo, 1, korpus 1, kv. 135; Ljudmila E. Ostrovskaya, ulitsa Tikhotskogo, 50, korpus 2, kv. 158; Galina G. Dzivitskaya, ulitsa Kuznechnaya, 52, kv. 352.; Igor D. Goretsky, ulitsa L. Karastoyanovoi, 13, kv. 49; Vasily M. Khoruzhy, ulitsa Brestskaya, 78, kv. 6; Nikolai M. Denisjuk, ulitsa Tolbukhina, 12, kv. 38; Anatoly Y. Volokh, ulitsa Kalinina, 19, kv. 14, and Oleg N. Pogorelsky, ulitsa Serova,3a, kv.3, all of Minsk, U.S.S.R.

Filed Apr. 17, 1978, Ser. No. 896,814

Int. Cl.[2] C08J *9/08*

U.S. Cl. 521—103 7 Claims

1. A method for producing a phenol foam plastic, wherein polycondensation, foaming, and curing occur simultaneously, said method consisting essentially of mixing polycondensation of phenols selected from the group consisting of pyrocatechol, hydroquinone, resorcinol, 5-methyl resorcinol, shale alkyl resorcinols, shale total resorcinols, and various combinations thereof, with an aqueous formaldehyde solution in the presence of a foaming agent and a catalyst selected from the group consisting of acid and alkaline catalysts.

4,221,874

PHOSPHOLANE OXIDE CONTAINING POLYMERS

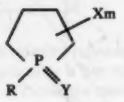
Kurt Moedritzer, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 752,041, Dec. 20, 1976, abandoned. This application Jun. 7, 1978, Ser. No. 913,723

Int. Cl.[2] C08K *5/53;* C08G *18/14*

U.S. Cl. 521—108 10 Claims

1. A process for the improvement of the flame retardant properties of a polyurethane polymer composition which comprises incorporating therein an effective flame retardant amount ranging from greater than 5% up to about 50% by weight, based on the weight of the final modified polymer, of a compound of the formula



where

X is chlorine or bromine;

m is a number from 2 to 4;

Y is oxygen or sulfur; and

R is an alkyl, aryl, alkoxy or aryloxy group of 1 to 10 carbon atoms.

4,221,875

FLAME RESISTANT POLYURETHANE FOAM AND THE METHOD FOR MANUFACTURING THE SAME

Toshio Yukuta, Kashio; Takumi Ishiwaka, and Noboru Yamaguchi, both of Yokohama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1978, Ser. No. 881,430

Claims priority, application Japan, Feb. 3, 1977, 52-022316

Int. Cl.[2] C08G *18/14, 18/32*

U.S. Cl. 521—128 8 Claims

1. In a rigid polyurethane foam obtained by reacting a polyhydroxyl compound with a polyisocyanate in the presence of blowing agent, silicone surfactant and catalyst, the improvement, which comprises; employment of hydrophobic polyetherpolyol having two or more hydroxyl groups per molecule as the polyhydroxyl compound and incorporation of 20 to 100 parts by weight of melamine per 100 parts by weight of the polyhydroxyl compound as a sole flame retardant component.

4,221,876

ISOCYANATE-REACTIVE MIXTURES BASED ON FORMOSE

Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,566

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738533; May 11, 1977, 2721186

Int. Cl.[2] C08G *18/14*

U.S. Cl. 521—158 31 Claims

1. Isocyanate reactive mixtures comprising

(a) from 20 to 90% by weight, based on (a)+(b), of a mixture of polyhydric alcohols, hydroxy aldehydes and hydroxy ketones which have been obtained by the condensation of formaldehyde hydrate

(b) from 10 to 80% by weight, based on (a)+(b), of aldehydes and/or ketones methylolated in the α-position and incapable of enediol formation
(c) from 0 to 50% by weight, based on (a)+(b), of water, and
(d) from 0 to 100% by weight, based on (a)+(b), of monosaccharides and/or disaccharides.

4,221,877

MODIFIED DIPHENYLMETHANE DIISOCYANATES USEFUL IN POLYURETHANES OR POLYISOCYANURATES

Michael Cuscurida; Robert L. Zimmerman, both of Austin, Tex., and Bobbie J. Ramey, deceased, late of Austin, Tex. (by Sara N. Ramey, executrix), assignors to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 796,936, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 710,780, Aug. 2, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 872,985
Int. Cl.[2] C08G *18/14, 18/78*
U.S. Cl. 521—160 3 Claims

1. A method of producing an improved flexible polyurethane foam which comprises reacting in presence of a blowing agent and a catalyst for polyurethane polymer formation, a polyol and a water-modified diphenylmethane diisocyanate obtained from water-treating a diphenylmethane diisocyanate to provide a diisocyanate mixture comprising 3–25 percent by weight of diphenylmethane biuret isocyanate and 75–97 percent by weight of diphenylmethane diisocyanate.

4,221,878

MYRCENE AS AN ACRYLONITRILE SCAVENGER

Edward F. Tokas, West Hatfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 18, 1978, Ser. No. 943,565
Int. Cl.[2] C08F *6/00*
U.S. Cl. 525—1 42 Claims

1. In the process of melting acrylonitrile copolymer by physical working while generating free acrylonitrile monomer in the melt, the improvement which comprises having a scavenging amount of myrcene in admixture with the copolymer during said melting to minimize the level of free acrylonitrile monomer in the copolymer.

4,221,879

IMPACT-RESISTANT POLYAMIDE MOULDING COMPOSITIONS

Gert Humme, Odenthal; Friedrich Fahnler; Dieter Neuray, both of Krefeld; Karl-Heinz Ott, Leverkusen, and Peter Tacke, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,379
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742176; Dec. 28, 1977, 2758615
Int. Cl.[2] C08L *77/00*
U.S. Cl. 525—66 8 Claims

1. A polyamide mounding composition, comprising a polymer mixture consisting substantially of
(I) 40 to 99.5% by weight of at least one polyamide having a relative viscosity (determined on a 1% solution in m-cresol at 25° C.) of from 2.3 to 5; and
(II) 0.5 to 60% by weight of a graft product prepared from
(a) 34 to 95% by weight of a cross-linked polymer selected from the group consisting of butadiene, substituted butadiene and mixtures thereof, with up to 40% by weight of a comonomer selected from the group consisting of styrene, acrylonitrile, an ester of acrylic acid and mixtures thereof as a graft substrate and
(b) 5 to 66% by weight of graft monomers consisting of
(α) 3 to 100% by weight of an ester of (meth)acrylic acid,
(β) 0 to 80% by weight of (meth)acrylamide, and
(γ) 0 to 80% by weight of (meth)acrylonitrile,
the sum of (I) and (II), of (a) and (b) and of (α)—(γ) in each case being substantially 100% by weight.

4,221,880

MOLDABLE BLEND OF INTERPOLYMER OF RUBBER, MALEIC ANHYDRIDE AND STYRENE WITH POLYPHENYLENE OXIDE

Ronald A. Fava, Monroeville, and Kenneth W. Doak, Murraysville, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,368
Int. Cl.[2] C08L *53/00*
U.S. Cl. 525—92 1 Claim

1. Thermoplastic molding compositions consisting of a two-component blend of:
A. From about b 40% to about 95% by weight of an interpolymer comprising from about 8 to about 16% block copolymer prepared in a stereospecific system using from 5% to 35% vinyl aromatic compound and from 65 to 95% conjugated alkadiene, and polymerizing in the presence of said block copolymer about 84 to about 92% of a mixture containing from about 88 to about 93% styrene and from about 7 to about 12% unsaturated dicarboxylic acid anhydride selected from the group consisting of maleic selected from the group consisting of maleic anhydride and citraconic anhydride.
B. From about 5% to about 60% of a polyphenylene oxide.

4,221,881

BLOCK POLYMERS OF POLYPHENYLENE OXIDE AND POLYSTYRENE

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,762
Int. Cl.[2] C08K *53/00*
U.S. Cl. 525—109 14 Claims

1. An acyl-coupled block polymer comprising a polyvalent acyl radical, a divalent quinone-coupled polyphenoxy radical, and a divalent bis(oxyarylenethio)polystyrene radical.

4,221,882

HIGH IMPACT MELT-FLOWABLE DUAL CONTINUUM MELT MIXED POLYMER BLENDS OF POLYPROPYLENE, POLYETHYLENE, AND ETHYLENE-PROPYLENE RUBBER

Terrence Huff, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 31, 1979, Ser. No. 7,861
Int. Cl.[2] C08L *23/12, 23/06, 23/16*
U.S. Cl. 525—240 14 Claims

1. A melt-flowable, high impact strength, melt mixed blend of polypropylene, ethylenepropylene copolymer rubber and polyethylene
wherein the ratio by weight of the polypropylene component to the combined polyethylene and ethylenepropylene copolymer rubber components is from about 1.0 to about 2.0; and
the polyethylene component is at least about 30% by weight of the total blend and the ethylene-propylene copolymer rubber component is from at least about 4% to about 11% by weight of the total blend.

4,221,883

IMPACT POLYMER PROCESS

Charles L. Mott, Midland, and Bernie A. Kozakiewicz, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 563,749, Mar. 31, 1975, abandoned, which is a continuation of Ser. No. 412,085, Nov. 2, 1973, abandoned, which is a continuation of Ser. No. 237,899, Mar. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 99,305, Dec. 17, 1970, abandoned. This application Oct. 18, 1976, Ser. No. 733,600

Int. Cl.[2] C08L *47/00*

U.S. Cl. 525—243 11 Claims

1. In a method for the preparation of impact or rubber reinforced alkenyl aromatic polymers wherein a polymerizable monomer composition is mass or mass-suspension polymerized in the presence of up to about 25 weight percent solvent based on the weight of the reaction mixture of a dissolved reinforcing polymer with agitation until the reinforcing polymer separates from the polymerizable monomer mixture as a plurality of particles to thereby result in phase inversion, wherein the polymerizable composition has from about 40 to 98 percent by weight of an alkenyl aromatic monomer, from about 0 to 45 weight percent of an olefinically unsaturated monomer copolymerizable with the alkenyl aromatic monomer and from about 2 to 40 weight percent of a rubbery butadiene reinforcing polymer having a glass temperature not higher than 0° C., the polymer containing at least 60 weight percent butadiene polymerized therein and up to 40 percent by weight of one or more ethylenically unsaturated monomers polymerized therein, the improvement which comprises

polymerizing the composition until separation of reinforcing polymer from the mixture occurs, the mixture containing 40 to 98 weight percent of the desired amount of reinforcing polymer, and

polymerizing the composition until at least an additional 10 percent amount of monomer has been converted to polymer, adding to the mixture with agitation a monomer solution containing from 60 to 2 weight percent of the total reinforcing polymer of a rubbery butadiene reinforcing polymer, the addition being made after separation of the particles or phase inversion and after sufficient additional polymerization has occurred such that phase reinversion does not occur.

4,221,884

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Le-Khac Bi, Pittsburgh, and Ralph Milkovich, Murrysville, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 9,708, Feb. 5, 1979. This application May 14, 1979, Ser. No. 38,611

Int. Cl. C08f *297/04*

U.S. Cl. 525—314 6 Claims

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula $(A\text{-}B/A'\text{-}B')_mX\text{—}B'\text{-}A'/B)_n$ where A is a non-elastomeric polymer segment based on the monovinyl aromatic compound, B/A′ or A′/B is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene wherein the weight ratio of A′ (the weight percent of monovinyl aromatic compound in the elastomeric polymer segment) to B (the weight percent of conjugated diene in the elastomeric polymer segment) must be less than 1.0, B′ is an elastomeric polymer segment based on the conjugated diene, m and n are integers whose sum is between 3 and 20, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A-B/A′-B′) and (B/A′-B′) are chemically bonded to form the star-block copolymers, wherein said segment A contains 80 to 95% by weight of the total monovinyl aromatic compound, segment B′ contains 20 to 40% by weight of the total conjugated diene, and segment B/A′ contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,221,885

ADDITION INTERPOLYMERS HAVING IMPROVED STABILITY AND TWO-PACKAGE COMPOSITIONS COMPRISING SUCH INTERPOLYMERS AND POLYEPOXIDES

Karl F. Schimmel, Verona; Roger M. Christenson, Gibsonia; Jerome A. Seiner, Pittsburgh, and James A. Claar, Export, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 771,134, Feb. 23, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 939,950

Int. Cl.[2] C08F *8/30*

U.S. Cl. 525—328 8 Claims

1. A water thinnable or reducible addition interpolymer having improved stability containing pendent anionic salt groups, pendent carboxyl groups, pendent amine groups and pendent aminolysis-resistant organic groups, wherein said interpolymer is prepared by interpolymerizing from about 5 percent to about 60 percent by weight of at least one ethylenically-unsaturated carboxylic acid monomer and from about 40 percent to about 95 percent by weight of a branched chain or alicyclic ester of an alpha, alkyl-substituted carboxylic acid so as to form an interpolymer having pendent carboxyl groups and pendent aminolysis-resistant organic groups and wherein said interpolymer is further reacted with sufficient alkylenimine to iminate from about 5 mole percent to about 95 mole percent of the carboxyl groups to form the pendent amine groups and sufficient base to form the pendent anionic salt groups and to result in a level of neutralization sufficient to give the interpolymer a pH of greater than 7.0 in water.

4,221,886

AGENT FOR SURFACE-SIZING PAPERS WITH MALEIC ANHYDRIDE COPOLYMERS

Rosemarie Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Division of Ser. No. 843,475, Oct. 19, 1977, Pat. No. 4,147,585. This application Oct. 31, 1978, Ser. No. 956,512

Claims priority, application Switzerland, Nov. 1, 1976, 13743/76

Int. Cl.[2] C08F *8/32;* C08J *3/02*

U.S. Cl. 525—329 2 Claims

1. A composition for surface size of paper with maleic anhydride copolymer, which contains a water-soluble salt of a copolymer of (a) 40 to 50 mol % maleic anhydride and/or maleic acid, (b) 50 to 40 mol % of styrene and (c) 5 to 15 mol % of a vinyl alkyl ether having 3 to 8 carbon atoms in the alkyl radical, which has been reacted with (d) 0.15 to 0.30 mol per mol of component (a) of a primary fatty amine having 12 to 22 carbon atoms.

4,221,887

PLASTICIZATION OF QUATERNARY PHOSPHONIUM ION CONTAINING POLYMERS

Douglas Brenner, Livingston, and Alexis A. Oswald, Mountainside, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 788,312, Apr. 18, 1977, Pat. No. 4,102,876. This application Jul. 17, 1978, Ser. No. 924,968

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.[2] C08G *75/00;* C08L *19/00*

U.S. Cl. 525—332 31 Claims

1. A blend composition which comprises:

(a) an ionomer having the general formula

$$C{-}A^{-}(F)^{+}$$

wherein C is one of a plurality of carbon atoms comprising a portion of the polymer backbone chain of carbon atoms or is in an acyclic, alicyclic or aromatic radical which is pendant to the backbone chain and wherein said C is (1) in a single polymer molecule, (2) in the same polymer molecule, (3) in different polymer molecules; A^- is one or more anionic acid radicals covalently bonded to one or more of said C carbon atoms; and $(F)^+$ is selected from the group of quaternary phosphonium counterions consisting of compounds having the general formula:

$$(PR'R''R'''R'')^+$$

$$+(PR'R''R'''{-}Q{-}R'R''R'''P)^+$$

$$+(PR'R''R'''{-}Q{-}(R')P^+(R''){-}Q{-}R'R''R'''P)^+$$

$$T(PR'R''R''')v^+$$

wherein R', R'', R''' and R'' are independently selected from the group consisting of C_1 to C_{50} straight and branched chain acyclic, alicyclic, aryl, alkylaryl and arylalkyl radicals and substituted functional derivatives thereof; Q is selected from the group consisting of C_4 to C_{40} divalent straight and branched chain alkylene cycloalkylene, arylene, dialkylene arylene radicals and substituted functional derivatives thereof and $-(CHY)_n{-}Z_m{-}(CHY)_n-$ wherein Z is a heteroatom selected from the group consisting of oxygen and sulfur; m is zero or one; Y is hydrogen or said C_1 to C_{50} radicals and substituted functional derivatives of said radicals; n is an integer from 1 to 10; and v is the valency of a polyvalent hydrocarbon radical T, v being 3–10, and

(b) less than about 75 parts by weight of a preferential plasticizer per 100 parts of said ionomer, said preferential plasticizer has the formula:

$$(L)_a(H)_b$$

wherein L is a lipophilic moiety and H is a hydrophilic moiety, wherein a and b are whole numbers ranging from 1 to 4.

4,221,888

METHOD OF HYDROLYZING ACRYLAMIDE AND METHACRYLAMIDE POLYMERS

Shigenao Kawakami, Hirakata; Shigenori Tajiri, Ibaraki; Hiroshi Tashiro, and Shin-ichi Isaoka, both of Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 13, 1978, Ser. No. 941,857
Claims priority, application Japan, Sep. 27, 1977, 52-116537
Int. Cl. C08f 8/2
U.S. Cl. 525—369 **13 Claims**

1. A process for preparing hydrolyzed acrylamide and methacrylamide polymers which comprises hydrolyzing a powdery acrylamide or methacrylamide polymer dispersed in a solvent mixture comprising water and at least one organic solvent selected from the group consisting of ketones, nitriles, ethers and furans at a temperature of from 10° to 40° C. wherein the concentration of the organic solvent in the solvent mixture is from 40 to 95% by weight and the hydrolysis is effected with alkali hydroxide in a chemically equivalent amount to the amide group to be hydrolyzed.

4,221,889

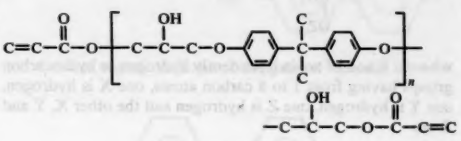
DIVINYL POLYESTER MOLDING COMPOSITIONS

Eugene H. Rowe, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 4, 1979, Ser. No. 45,167
Int. Cl.² C08L 63/00
U.S. Cl. 525—404 **10 Claims**

1. A divinyl polyester molding composition comprising:

(a) a divinyl polyester resin, having the following skeletal structure



n = 1 to 2

(b) a polymerizable monomer,

(c) from about 1 to about 30 parts by weight of an epihalohydrin polymer per 100 parts by weight of the combined weight of said unsaturated polyester resin and polymerizable monomer.

4,221,890

EPOXY RESIN COMPOSITION AND METHOD FOR MAKING SAME

Floyd E. Dimmick, Barrington Hills, Ill., assignor to Thermal-Chem, Inc., Elk Grove Village, Ill.

Filed Sep. 30, 1977, Ser. No. 838,360
Int. Cl.² C08K 5/13, 5/53
U.S. Cl. 525—407 **40 Claims**

1. A low viscosity, 100% solids epoxy-amine composition which is workable and cures at a temperature at least as low as 0° F. and at least as high as 140° F., which is particularly adapted for concrete rehabilitation and preservation and which comprises an epoxy resin having a plurality of 1,2 epoxy groups and a curing agent including a first aliphatic polyamine composition, a first accelerator comprising Bisphenol-A, a second polyamine composition, and a second accelerator selected from the group comprising N-aminoethylpiperazine, nonyl phenol, and tris(dimethylaminomethyl)phenol.

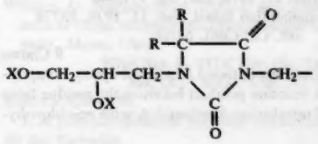
4,221,891

ESTERS OF IMIDAZOLIDINEDIONE-BASED TRIEPOXIDES AND COATING COMPOSITIONS CONTAINING SAME

J. Alden Erikson, Gibsonia; Ronald J. Lewarchik, Natrona Heights, and William J. Birkmeyer, Oakmont, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 950,097, Oct. 10, 1978. This application May 21, 1979, Ser. No. 41,122
Int. Cl.² C08L 63/00; C07D 233/72
U.S. Cl. 525—514 **13 Claims**

1. A coating composition containing less than about 40 percent organic solvent, consisting essentially of (a) from about 5 percent to about 90 percent of an ester of an imidazolidinedione-based triepoxide having the formula:



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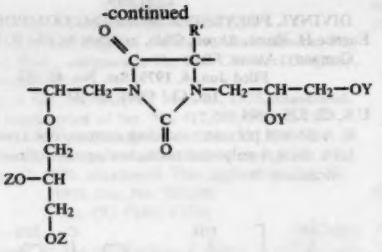


wherein R and R' are independently hydrogen or hydrocarbon groups having from 1 to 8 carbon atoms, one X is hydrogen, one Y is hydrogen, one Z is hydrogen and the other X, Y and Z are

groups where the R'' groups are independently hydrocarbon groups having from 1 to 17 carbon atoms; and (b) from about 5 percent to about 80 percent of a crosslinking agent selected from the group consisting of the aminoplasts, isocyanates, blocked isocyanates, phenoplasts and mixtures thereof.

4,221,892

PHOTOCURABLE PARTIALLY ESTERIFIED POLYEPOXIDES

Lynne B. Baron, Framingham, and George A. Lee, Wayland, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 30, 1978, Ser. No. 965,216
Int. Cl.[2] C08L *63/00*
U.S. Cl. 525—531 **6 Claims**

1. An ultraviolet radiation curable resin composition comprising a mixture of polymerizable entities including (1) a polyepoxide, (2) an epoxy ester resulting from partial or complete esterification of the epoxy groups of a portion of said polyepoxide with an unsaturated carboxylic acid and (3) a partially or completely hydrolyzed portion of said polyepoxide, said composition prepared by the process comprising the mixing of a polyepoxide, from 10 to 90 mole percent based on oxirane groups of an unsaturated monocarboxylic acid and at least 0.6 equivalent water per equivalent of oxirane groups, an addition polymerization inhibitor and a catalyst for the esterification reaction of carboxyl groups with oxirane groups and reacting the ingredients at elevated temperature under conditions to prevent loss of water until substantially all of said acid has been esterified and subsequently removing excess water.

4,221,893

BROMINATED BISPHENOL-A EPOXY COMPOSITIONS

Meir Behar, Beer Sheva; Ori Peshes, Omer, and Aharon Liebersohn, Beer Sheva, all of Israel, assignors to Makhteshim Chemical Works Limited, Beer Sheva, Israel

Filed Dec. 20, 1978, Ser. No. 971,640
Claims priority, application Israel, Jan. 11, 1978, 53778
Int. Cl.[2] C08L *63/00*
U.S. Cl. 525—438 **9 Claims**

1. A flame retardant brominated bisphenol epoxy composition comprising the reaction product between the residue from the manufacture of tetrabromo-bisphenol-A with epichlorohydrin.

4,221,894

PROCESS FOR POLYMERIZING α-OLEFINS CONTAINING AT LEAST 3 CARBON ATOMS AND CATALYST THEREFOR

Yoshihisa Ushida, Otake; Kiyoshi Odawara, Waki; Norio Kashiwa; Akinori Toyota, both of Iwakuni, and Syuji Minami, Otake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 748,649, Dec. 8, 1976, abandoned. This application Oct. 16, 1978, Ser. No. 951,973
Claims priority, application Japan, Dec. 10, 1975, 50/146301
Int. Cl.[2] C08F *4/02, 10/06*
U.S. Cl. 526—125 **13 Claims**

1. A process for polymerizing or copolymerizing α-olefins having at least 3 carbon atoms or copolymerizing α-olefins having at least 3 carbon atoms with not more than 50 mol% of ethylene in the presence of a catalyst composed of (B) an organoaluminum compound of the formula

$$R_m^1Al(OR^2)_nH_pX_q$$

wherein R^1 and R^2 are identical to, or different from, each other and represent an alkyl group containing 1 to 8 carbon atoms, X represents a halogen atom, m is more than 0 but not more than 3 ($0<m\leqq 3$), n is at least 0 but less than 3 ($0\leqq n<3$), p is at least 0 but less than 3 ($0\leqq p<3$), q is at least 0 but less than 3 ($0\leqq q<3$), and $m+n+p+q=3$, and (A) a titanium catalyst component supported on a halogen-containing magnesium compound selected from the group consisting of a magnesium dihalide and a halogen-containing magnesium compound having an alkoxy group, said titanium catalyst component consisting essentially of a solid reaction product obtained by treating under non-mechanical pulverization conditions at a temperature of about 0 to about 100° C. (i) a mechanically copulverized product of said halogen-containing magnesium compound and from about 0.01 to less than 1 mol, per mol of the halogen-containing magnesium compound, of an organic acid ester selected from the group consisting of aliphatic carboxylic acid esters containing up to 18 carbon atoms, halogenated aliphatic carboxylic acid esters containing up to 18 carbon atoms, alicyclic carboxylic acid esters containing up to 12 carbon atoms and aromatic carboxylic acid esters containing up to 20 carbon atoms with (ii) an organo-aluminum compound having the formula

$$R_m^1Al(OR^2)_nH_pX_q$$

where R^1, R^2, m, n, p, q and X are as defined above and then reacting the resulting solid product with (iii) a titanium compound of the formula

$$Ti(OR)_rX_{4-r}$$

wherein R represents a hydrocarbon group, X represents a halogen atom, and r is a number of 0 to 4 ($0\leqq r\leqq 4$) in the absence of mechanical pulverization wherein the molar ratio of the metal atom in the organometallic compound (B) to the titanium atom in the titanium compound (iii) is about 1:1 to about 1000:1.

4,221,895

THERMALLY RESISTANT THERMOSETTING AROMATIC POLYMERS CONTAINING PENDANT 1-ALKYNYL SUBSTITUENTS

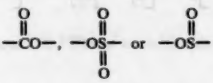
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1978, Ser. No. 897,312
Int. Cl.[2] C08G *63/54, 75/24, 75/26*
U.S. Cl. 526—270 **12 Claims**

1. An aromatic thermosetting prepolymer consisting essentially of repeating units of the formula:

$$+YAr+$$

wherein each Ar is independently an aromatic group essentially free of acyclic aliphatic carbon-to-carbon bonds provided that at least two of Ar have pendant 1-alkynyl substituents and each Y is independently



said prepolymer being curable upon application of heat to form a heat-resistant thermoset polymer.

4,221,896

ROOM TEMPERATURE CURABLE COMPOSITION

Isao Endo, Ohta, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,648
Claims priority, application Japan, Mar. 30, 1978, 53-36983
Int. Cl.[2] C08G 77/04
U.S. Cl. 528—28 **19 Claims**

1. A room temperature curable polyorganosiloxane composition which consists essentially of (A) 100 parts by weight of α,ω-dihydroxypoly(diorganosiloxane) having the formula:

$$HO(R^1{}_2SiO)_nH$$

wherein R^1 is a monovalent substituted or unsubstituted hydrocarbon group and the R^1 groups can be the same or different, and n is a number such that said α,ω-dihydroxypoly(diorganosiloxane) has a viscosity of 20 to 1,000,000 measured at 25° C.,

(B) 0.1 to 30 parts by weight of aminoxy group-containing organic silicon compound having at least two organoaminoxy groups on the average in the molecule, and (C) 0.001 to 20 parts by weight of compound having at least one isocyanate group in the molecule.

4,221,897

METHOD FOR MAKING POLYETHERAMIDE ACID

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1979, Ser. No. 37,435
Int. Cl.[2] C08G 73/10
U.S. Cl. 528—125 **7 Claims**

1. A method for making polyetheramide acid imide or polyetherimide which comprises

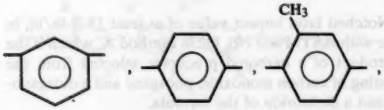
(A) heating a mixture at a temperature in the range of from 30° C. to 250° C. which is substantially free of organic solvent and which comprises by weight 20% to 95% of water, and 5% to 80% of a substantially equal molar mixture of organic diamine of the formula,

$$H_2N—R—NH_2,$$

and a bis(ether dicarbonyl) compound of the formula,

$$Q^1—O—Z—O—Q^1, \text{ and}$$

(B) recovering the polyetheramide acid imide or polyetherimide from the mixture of (A), where Z is a member selected from



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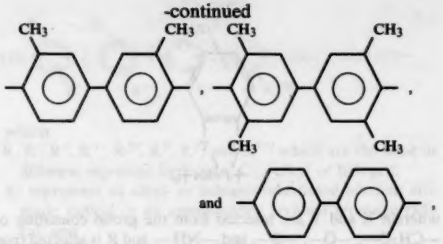
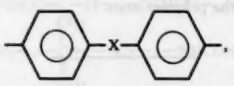
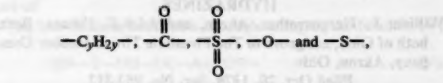


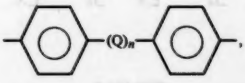
and divalent organic radicals of the general formula,



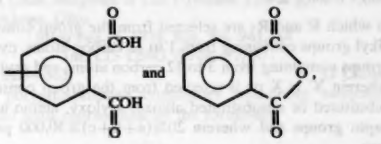
where X is a member selected from the class consisting of divalent radicals of the formulas,



R is a divalent organic radical selected from the class consisting of aromatic hydrocarbon radicals having from 6 to 20 carbon atmos and halogenated derivatives thereof, alkylene radicals having from 2 to about 20 carbon atoms, cycloalkylene radicals having from 3 to 20 carbon atoms, from C_2 to about C_8 alkylene terminated polydiorganosiloxane and divalent radicals of the general formula,



Q is a member selected from the class consisting of —O—, —S—, and $—C_xH_{2x}—$, Q^1 is a member selected from



y is an integer from 1 to 5, x is an integer from 1 to 5 and n is 0 or 1.

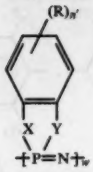
4,221,898

POLYPHOSPHAZENE POLYMERS CONTAINING ORTHO-DIFUNCTIONAL PHENYLENE SUBSTITUTENTS

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,113
Int. Cl.[3] C08G 79/04, 73/00
U.S. Cl. 528—168 **10 Claims**

1. A polyphosphazene polymer containing units represented by the formulas:



wherein X and Y are selected from the group consisting of: $-CH_2O-$, $-O-$, $-S-$, and $-NH-$; and R is selected from the group consisting of halogen, cyano, nitro, and alkoxy and alkyl radicals containing from 1 to 12 carbon atoms; $n'=0$ to 4; $20 \leqq (w) \leqq 50{,}000$; and X, Y, R and n' are independently selective in each of the polymer units.

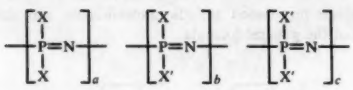
4,221,899

POLYPHOSPHAZENE POLYMERS CONTAINING SUBSTITUENTS DERIVED FROM ALKYL OR ARYL HYDRAZINES

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 20, 1978, Ser. No. 953,312
Int. Cl.[2] C08G *79/02, 73/00*
U.S. Cl. 528—168 **12 Claims**

1. A polyphosphazene polymer containing units represented by the formulas:



wherein X is

in which R and R_1 are selected from the group consisting of alkyl groups containing from 1 to 12 carbon atoms, cycloalkyl groups containing from 3 to 12 carbon atoms and aryl groups; wherein X' is X or is selected from the group consisting of substituted or unsubstituted alkoxy, aryloxy, amino and mercapto groups and wherein $20 \leqq (a+b+c) \leqq 50{,}000$ per polymer.

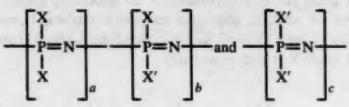
4,221,900

POLYPHOSPHAZENE COPOLYMERS CONTAINING SUBSTITUENTS DERIVED FROM SUBSTITUTED 2-NITROETHANOLS

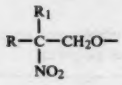
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 16, 1979, Ser. No. 12,620
Int. Cl.[3] C08G *79/02, 73/00*
U.S. Cl. 528—168 **9 Claims**

1. A polyphosphazene copolymer containing units represented by the formulas:



wherein X is



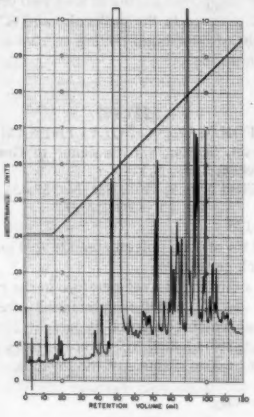
in which R and R_1 are selected from the group consisting of alkyl groups containing from 1 to 12 carbon atoms, cycloalkyl groups containing from 3 to 12 carbon atoms and aryl groups; wherein X' is selected from the group consisting of substituted or unsubstituted alkoxy, aryloxy, amino and mercapto groups and wherein $\leqq 20$ $(a+b+c) \leqq 50{,}000$ per polymer.

4,221,901

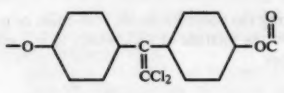
METHOD FOR DEHYDROCHLORINATING 1,1,1-TRICHLORO-2,2-BIS(4-HYDROXYPHENYL)ETHANE AND PRODUCTS OBTAINED THEREFROM

William K. S. Cleveland, Amsterdam; Jimmy L. Webb, Ballston Lake, and Charles M. Orlando, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

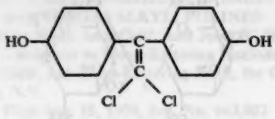
Division of Ser. No. 765,654, Feb. 4, 1977, Pat. No. 4,117,018. This application Jun. 27, 1978, Ser. No. 919,461
Int. Cl.[2] C08G *63/62*
U.S. Cl. 528—202 **1 Claim**



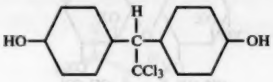
1. A polycarbonate consisting essentially of chemically combined units of the formula,



having a Notched Izod impact value of at least 15 ft-lb/in, in accordance with ASTM test No. D256 Method A, which is the reaction product of a carbonyl precursor selected from the class consisting of carbon monoxide, phosgene and a diorganocarbonate and a dichloride of the formula,



having up to about 750 PPM of a trichloride of the formula,



4,221,902

ACRYLATE-UREADIACETOACETAMIDE-DIACETOACETAMIDE COPOLYMERS

John S. Heckles, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 14, 1978, Ser. No. 942,189

Int. Cl.[2] C08G *6/00, 12/28, 12/34, 12/36*

U.S. Cl. 528—228 **15 Claims**

1. A cross-linked random acrylate-ureadiacetoacetamide-diacetoacetamide copolymer produced by the reaction of at least one polyfunctional acrylate with at least one ureadiacetoacetamide and at least one diacetoacetamide in the presence of a catalyst capable of promoting the reaction between the polyfunctional acrylate, the ureadiacetoacetamide, and the diacetoacetamide.

4,221,903

SEMIPERMEABLE MEMBRANES OF HETEROCYCLIC COPOLYAMIDES

Klaus Elfert, Krefeld; Gerhard D. Wolf, Dormagen; Francis Bentz, Cologne, and Hans E. Künzel, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 746,728, Dec. 2, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,609

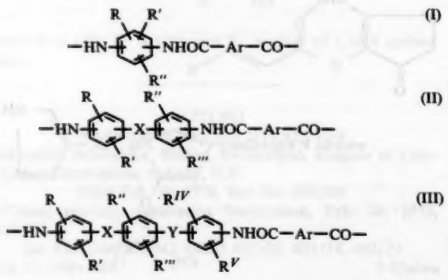
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554922

Int. Cl.[2] C08G *69/32*

U.S. Cl. 528—341 **12 Claims**

1. A semipermeable membrane with a water absorption capacity of from 4.5 to 11% by weight, as measured on an approximately 40μ thick symmetrical film at room temperature at 65% relative air humidity, a throughflow of from 130 to 200 l/m²d for a desalination level of from 94.6 to 99.5% and consisting of an aromatic heterocycle-containing copolyamide

(A) 10 to 95 mole% of one or more units corresponding to Formulae I–IV below:

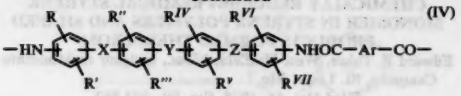


(I)

(II)

(III)

-continued



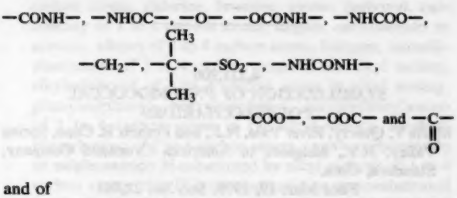
(IV)

in which

R, R′, R″, R‴, R^{IV}, R^{V}, R^{VI} and R^{VII} which are the same or different represent hydrogen, C_{1-4}-alkyl or halogen;

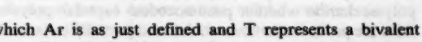
Ar represents an alkyl- or halogen-substituted bivalent aromatic radical or an unsubstituted bivalent aromatic radical; and

X, Y and Z, each represent a direct bond or a bridge member selected from the group consisting of



and of

(B) 5 to 90 mole% of units corresponding to the formula (V)



(V),

in which Ar is as just defined and T represents a bivalent heterocyclic radical which contains one or more aromatic or heterocyclic radicals.

4,221,904

POLYPHOSPHAZENE COPOLYMERS CONTAINING SUBSTITUENTS DERIVED FROM PYRUVATE ESTERS

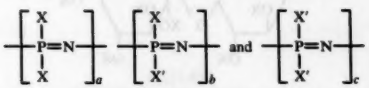
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,114

Int. Cl.[2] C08G *79/04, 79/00*

U.S. Cl. 528—363 **12 Claims**

1. A polyphosphazene copolymer containing randomly distributed units represented by the formulas:



wherein X is

in which R is alkyl containing from 1 to 12 carbon atoms or aryl, wherein X′ is selected from the group consisting of substituted or unsubstituted alkoxy, aryloxy, amino and mercapto groups and wherein $20 \leqq (a+b+c) \leqq 50{,}000$ per polymer.

4,221,905

CHEMICALLY REDUCING RESIDUAL STYRENE MONOMER IN STYRENE POLYMERS AND SHAPED PRODUCTS FORMED THEREFROM

Edward F. Tokas, West Hatfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 16, 1978, Ser. No. 951,503
Int. Cl.³ C08F 6/00; C08K 5/01
U.S. Cl. 528—498 **12 Claims**

1. In the process of melting a styrenic polymer containing at least about 10 percent by weight of polymerized styrene by physical working while generating free styrene monomer in the melt, the improvement which comprises having a scavenging amount of myrcene in admixture with the polymer during said melting to minimize the level of free styrene monomer in the polymer.

4,221,906

STABILIZATION OF PNEUMOCOCCAL POLYSACCHARIDES

Merle V. Querry, River Vale, N.J., and Francis R. Cano, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 21,861
Int. Cl.³ C07H 1/06; C08B 37/00
U.S. Cl. 536—1 **66 Claims**

1. In a process of purifying Type-19 pneumococcal capsular polysaccharide wherein pneumococcal capsular polysaccharides are produced in fermentation and partially isolated therefrom and lyophilized wherein the improvement comprises stabilizing the Type-19 pneumococcal capsular polysacharides during lyophilization by adding an effective stabilizing amount of glycine to the prelyophilate mixture.

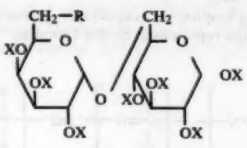
4,221,907

SUBSTITUTED O-α-D AND O-β-D-MULTI-GALACTOPYRANOSYL AND GLUCOPYRANOSYL 1→4 AND 1→6 GALACTOPYRANOSYL 1→6 α-D-GLUCOPYRANOSES

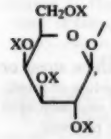
Vijay G. Nair, New York, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,851
Int. Cl.² C07H 11/00, 13/12; A61K 31/70
U.S. Cl. 536—118 **15 Claims**

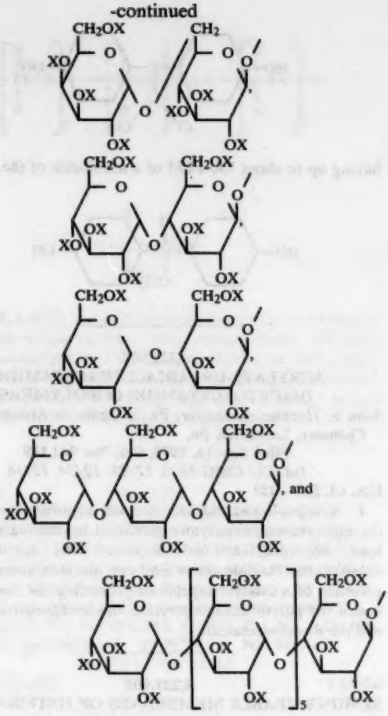
1. A compound of the formula:



wherein X is SO_3A; wherein A is a pharmaceutically acceptable salt cation; and R is selected from the group consisting of OX,



-continued



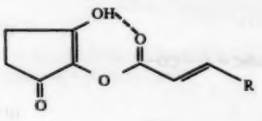
4,221,908

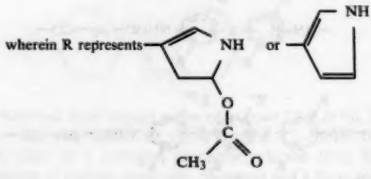
ANTIBACTERIAL COMPOUNDS AND PROCESS FOR PRODUCTION THEREOF

Gakuzo Tamura, and Kenichi Shimizu, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 878,776, Feb. 17, 1978. This application Apr. 16, 1979, Ser. No. 30,659
Claims priority, application Japan, Feb. 18, 1977, 52-16068
Int. Cl.² C07D 207/20, 207/24
U.S. Cl. 542—426 **5 Claims**

1. Compounds represented by the following general formula:



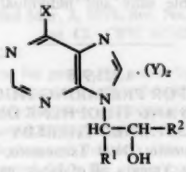


4,221,909
P-ACETAMIDOBENZOIC ACID SALTS OF 9-(HYDROXYALKYL) PURINES

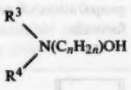
Lionel N. Simon, Santa Ana, Calif., and John W. Hadden, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, Calif. and Sloan-Kettering Instit. for Cancer Res., New York, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,802
Int. Cl.³ C07D *473/28*
U.S. Cl. 544—265 30 Claims

1. A compound of the formula



where X is OH, NH_2, SH, OR or SR (where R is alkyl of 1 to 4 carbon atoms or benzyl) R^1 is H or alkyl of 1 to 8 carbon atoms, R^2 is H or methyl, Y is the salt of an amine of the formula



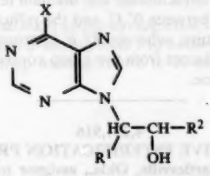
where R^3 and R^4 are lower alkyl, n is an integer from 2 to 4 and where z is a number from 1 to 10
with p-acetamidobenzoic acid where z is a number from 1 to 10.

4,221,910
9-(HYDROXY ALKYL)PURINES

Alfredo Giner-Sorolla, Riverside, Conn., assignor to Newport Pharmaceuticals International, Inc., Calif. and Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,804
Int. Cl.³ C07D *473/30*
U.S. Cl. 544—265 6 Claims

1. A compound of the formula



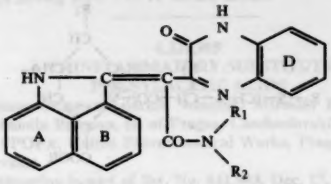
where X is OH, R^2 is CH_3 and R^1 is alkyl of 1 to 8 carbon atoms.

4,221,911
NAPHTHOLACTAM DYESTUFFS

Hansrudolf Schwander, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 19, 1976, Ser. No. 659,389
Claims priority, application Switzerland, Feb. 28, 1975, 2562/75
Int. Cl.² D06P *1/642*; C07D *403/06, 403/14, 401/14*
U.S. Cl. 544—354 7 Claims

1. A dye of the formula



wherein

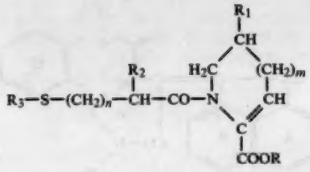
rings A and B are unsubstituted or monosubstituted or identically disubstituted by unsubstituted or substituted alkyl of 1 to 4 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, chlorine, bromine, cyano, carboxyl, carbolkoxy of 1 to 4 carbon atoms, sulpho, carboxamido or acetoxy, alkoxy of 1 to 4 carbon atoms, halogen, nitroalkylmercapto of 1 to 4 carbon atoms in the alkyl moiety, alkylsulphonyl of 1 to 4 carbon atoms in alkyl moiety, phenylsulphonyl, benzylsulphonyl, alkylcarbonylamino of 1 to 4 carbon atoms in the alkyl moiety, alkylsulphonylamino of 1 to 4 carbon atoms, cyano, carboxamido or sulphonamido N-substituted by alkyl radicals of 1 to 4 carbon atoms, ring D is unsubstituted or monosubstituted or identically disubsituted by unsubstituted or substituted alkyl or 1 to 4 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, chlorine, bromine cyano, carboxyl, carbalkoxy of 1 to 4 carbon atoms, sulpho, carboxamido or acetoxy, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms in the alkyl moiety, halogen cyano, carboalkoxy, cyclohexyl phenylalkylene of 1 to 3 carbon atoms, phenyl, phenoxy, alkylsulphonyl of 1 to 4 carbon atoms in the alkyl moiety, phenylsulphonyl, or sulphonamido N-substituted by alkyl radicals of 1 to 4 carbon atoms, the ring D can additionally be fused to a benzene ring, and R_1 and R_2 are hydrogen atoms or unsubstituted or substituted C_1–C_8-alkyl substituted by hydroxy, carboxyl, cyano, halogen, carbalkoxy of 2 to 6 carbon atoms, alkoxy of 1 to 8 carbon atoms, phenoxy or acyl of a fatty acid radical containing up to 5 carbon atoms, alkylcarbamyl of 1 to 5 carbon atoms, alkyloxycarbonyl containing up to 5 carbon atoms, phenylcarbamyl, phenoxycarbonyl, benzoxyl, phenoxyacetyl, chloroacetyl or phenylacetyl, or phenyl unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, β-hydroxyethyl, lower carboalkoxy, benzyl, phenethyl or cyclohexyl or together form a piperidine, pyrrolidine, morpholine, piperazine or methylpiperazine ring.

4,221,912
DITHIO DERIVATIVES OF 4,5-DIHYDRO-1H-PYRROLE-2-CARBOXYLIC ACIDS AND 1,4,5,6-TETRAHYDROPYRIDINE-2-CARBOXYLIC ACIDS

Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 967,827, Dec. 8, 1978. This application Aug. 22, 1979, Ser. No. 69,017
Int. Cl.² C07D *207/16, 213/55*
U.S. Cl. 546—263 5 Claims

1. A compound of the formula

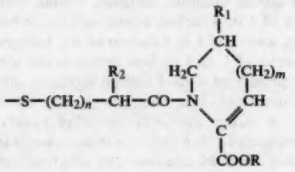


wherein

R and R_2 each is hydrogen or lower alkyl;

R_1 is hydrogen, hydroxy, halogen or lower alkoxy;

R_3



m and n each is 0 or 1;

and physiologically acceptable salts thereof.

4,221,913

PREPARATION OF 2-(CHLOROMETHYL)PYRIDINE

R. Garth Pews, and Mezzie L. Ash, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1979, Ser. No. 15,543

Int. Cl.[2] C07D *213/26*

U.S. Cl. 546—346 **7 Claims**

1. A process for preparing 2-(chloromethyl)pyridine which comprises reacting by contacting 2-methylpyridine-N-oxide with phosgene in the presence of a solvent selected from the group consisting of methylene chloride, methanol, acetonitrile, toluene, p-dioxane, nitrobenzene, tetrahydrofuran, dimethoxy ethane, ethylene dichloride and diethyl carbonate and an acid acceptor at a temperature of from about 3° to about 25° C.

4,221,914

ALPHA-HALOMETHYL DERIVATIVES OF HISTAMINE AND RELATED COMPOUNDS

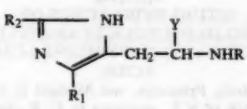
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Continuation of Ser. No. 843,659, Oct. 19, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,640

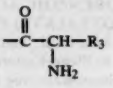
Int. Cl.[2] C07D *233/64, 233/66*

U.S. Cl. 548—342 **10 Claims**

1. A compound of the formula



wherein Y is FCH_2—, F_2CH—, or F_3C—; R is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or



wherein R_3 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; each of R_1 and R_2 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms and may be the same or different, or R_1 is hydrogen and R_2 is fluorine; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,221,915

PROCESS FOR PREPARING THIOPHENE DERIVATIVES AND THIOPHENE DERIVATIVES OBTAINED THEREBY

Kiyoshi Kondo, Yamato; Daiei Tsunemoto, Sagamihara, and Tamotsu Fujisawa, Yamato, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

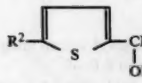
Filed Mar. 10, 1978, Ser. No. 885,261

Claims priority, application Japan, Mar. 11, 1977, 52-26049; Mar. 11, 1977, 52-26050

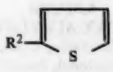
Int. Cl.[3] C07D *333/16, 333/24*

U.S. Cl. 549—78 **15 Claims**

1. A process for the preparation of α-trihalomethyl-2-thiophenemethanols of the formula



which comprises reacting a thiophene of the formula



with a trihaloacetaldehyde of the formula CX_3CHO under an acidic condition which is established by carrying out said reaction in the presence of an acid selected from the group consisting of (i) an ion-exchange resin comprising an acid supported on a polymer substance, (ii) titanium tetrachloride, and (iii) titanium tetrachloride and titanium tetraisopropoxide, at a temperature between 0° C. and the reflux temperature of the reaction mixture, wherein R^2 is hydrogen or a halogen atom; and X is selected from the group consisting of chlorine, bromine and iodine.

4,221,916

OXIDATIVE ESTERIFICATION PROCESS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1978, Ser. No. 936,952

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—243 **5 Claims**

1. In a process for the production of saturated vicinal esters which comprises reacting

(a) at least one olefinic compound having at least 3 carbon atoms and having from 1 to 3 olefinic carbon-carbon double bonds and free of conjugated double bonds, with

(b) at least one of mono- and dicarboxylic acids and monocarboxylic acid anhydride in an amount which is at least sufficient to provide at least 2 equivalents of acyloxy moiety per equivalent of carbon-carbon bond moiety in the olefinic reactant in the presence of

(c) free oxygen, the improvement comprising contacting (a), (b) and (c) with

(d) a catalytically effective amount of a catalyst consisting essentially of an oxide, hydroxide, acetylacetonate, carboxylate or nitrate of vanadium or ruthernium under conditions which produce saturated vicinal esters.

4,221,917

PRODUCTION OF ESTERS FROM MONOOLEFINS AND DIOLEFINS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 3, 1978, Ser. No. 883,012

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—246 **64 Claims**

1. In a process for producing esters by

contacting at least one olefin selected from the group consisting of substituted or unsubstituted monoolefins, substituted or unsubstituted diolefins and mixtures thereof; at least one iodosoaryl dicarboxylate and at least one compound selected from the group consisting of carboxylic acids, carboxylic acid anhydrides and mixtures thereof; the improvement comprising employing in said process oxygen at a pressure within the range of about 0.1 to about 1000 psig above autogenous pressure at the temperature employed; and a source of bromide ion wherein the atom ratio of bromide ion to iodide is within the range of from about 1:1 to about 5:1 to form a reaction mixture which is subjected to suitable reaction conditions to produce a corresponding ester.

4,221,918

PREPARATION OF DIESTERS

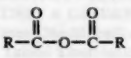
Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1978, Ser. No. 956,018

Int. Cl.[2] C07C *67/00, 69/16, 69/28, 69/74*

U.S. Cl. 560—263 **7 Claims**

1. A heterogeneous process for preparing 1,1-diesters which comprises contacting a carboxylic acid anhydride with hydrogen in the presence of an insoluble metal hydrogenation catalyst and a strong protonic acid having a pKa of less than 4, said carboxylic acid anhydride being selected from the group consisting of anhydrides having the structure



wherein R is an alkyl group having from 1 to 20 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, an alkenyl or alkynyl group having from 2 to 20 carbon atoms, aryl or alkaryl groups having from 6 to 12 carbon atoms, or aralkyl groups having from 7 to 12 carbon atoms.

4,221,919

ANTIINFLAMMATORY SUBSTITUTED PHENYLACETIC ACIDS

Jaroslava Grimova; Oldrich Nemecek; Miroslav Kuchar, and Bohumila Brunova, all of Prague, Czechoslovakia, assignors to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 641,643, Dec. 17, 1975. This application Apr. 24, 1979, Ser. No. 33,147

Claims priority, application Czechoslovakia, Dec. 17, 1974, 8681/74

Int. Cl.[2] C07C *69/76*

U.S. Cl. 562—465 **2 Claims**

1. 3-Chloro-4-(3'-chloro-4'-methoxybenzyloxy) phenylacetic acid.

4,221,920

AROMATIC SALICYLATE PROCESS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 731,443, Oct. 12, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,534

Int. Cl.[2] C07C *9/84*

U.S. Cl. 562—406 **20 Claims**

1. An aromatic salicylate process which comprises contacting sequentially the following reactant groups:

(a) a phenol, a base, and a Group VIIIB element selected from ruthenium, rhodium, palladium, osmium, iridium or platinum having an oxidation state of at least +2, and subsequently

(b) carbon monoxide.

4,221,921

MONOCHLOROACETIC ACID FROM HYDROXYACETIC ACID

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 735,650, Oct. 26, 1976, abandoned. This application May 10, 1978, Ser. No. 904,670

Int. Cl.[2] C07C *51/00, 53/16*

U.S. Cl. 562—603 **6 Claims**

1. A process for producing monochloroacetic acid from hydroxyacetic acid which comprises feeding hydroxyacetic acid and aqueous hydrogen chloride to a reaction zone and contacting the hydroxyacetic acid with the aqueous hydrogen chloride in the presence of 0.0001 to 1.0 mol hydrogen iodide per mol of hydroxyacetic acid at a temperature between 100° and 250° C. and a pressure sufficient to maintain the aqueous hydrogen chloride in liquid phase.

4,221,922

WATER COOLED PANEL USED IN AN ELECTRIC FURNACE

Katutosi Okimune, Takasago, Japan, assignor to Sanyo Special Steel Co., Ltd., Hyogo, Japan

Filed Nov. 7, 1978, Ser. No. 958,415
Claims priority, application Japan, Dec. 6, 1977, 52-146452
Int. Cl.[2] F27D *1/12*
U.S. Cl. 13—32 8 Claims

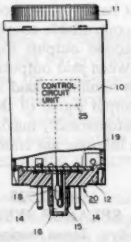
1. A water cooled panel to be used in an electric furnace comprising a base plate of 6 to 30 mm thick, a length less than $\frac{1}{4}$ of the furnace shell circumference and smaller than $\frac{2}{3}$ of the height of the side walls, multiple fins of thickness of $\frac{1}{3}$ to 4/3 of that of the base plate horizontally placed on one side of the base plate with a spacing of 40 to 100 mm and protruding 30 to 150 mm toward the inside of the furnace, multiple steel channels having a water flowing area of 4 to 56 cm^2 and a thickness of $\frac{1}{3}$ to 4/3 of that of the base plate, welded horizontally side by side in principle on the other side of the base plate, to the ends of which a connecting element is welded to complete a snake-like continuous water flow from one channel to another both ends of which are equipped with a water inlet and an outlet mouth, and a plurality of fixtures welded on the same side of the water flowing channels to fasten the panel to the shell of the furnace, weldment of said fins and that of said water flowing channels being different in location across the base plate.

4,221,923

TEMPERATURE CONTROLLER HAVING COLD JUNCTION COMPENSATION ELEMENT POSITIONED WITHIN A GUIDEPIN

Toshiaki Nagao, and Yasuo Ohashi, both of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 20, 1978, Ser. No. 953,028
Claims priority, application Japan, Nov. 9, 1977, 52-134943
Int. Cl.[2] G01K *7/12*
U.S. Cl. 136—222 5 Claims



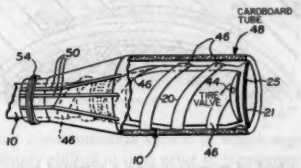
1. In selectively removable temperature controller utilizing a thermocouple which comprises a housing, a control circuit unit mounted in the interior of said housing, a cold junction compensation element, a mounting plug closing an end portion of said housing and having a hollow projecting guide-pin and a plurality of projecting terminal-pins surrounding said guide-pin and means in said housing for interconnecting said control circuit unit, cold junction compensation element and terminal-pins, the improvement wherein said hollow guide-pin has an opening communicating with the exterior of said guide-pin and said cold junction compensation element is positioned in said hollow guide-pin.

4,221,924

END SEALS FOR PRE-CONNECTORIZED TELEPHONE CABLES

Anthony P. Gabriel, Staten Island, N.Y., and John D. Lawler, Mt. Pleasant Village, N.J., assignors to General Cable Corporation, Greenwich, Conn.

Filed May 25, 1978, Ser. No. 909,384
Int. Cl.[3] H02G *15/04*
U.S. Cl. 174—10 4 Claims



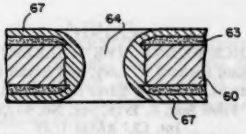
1. The combination comprising a protection device and a telephone cable that has a jacket and conductors which have pre-connectorized ends, said protection device comprising an envelope closed at all sides except for a rearward neck end of the envelope that surrounds a jacket portion of the cable, the envelope being long enough to contain the end portion of the cable having the pre-connectorized ends of the conductors, means securing the neck end of the envelope to the jacket of the cable, an outer protecting tube surrounding the envelope to provide mechanical protection for the envelope during transport of the cable to a place where the pre-connectorized conductors are to be connected with other conductors, and the protecting tube having an end tapered down to a reduced diameter beyond the connection of the envelope to the jacket and being secured to the jacket at the small end of the taper.

4,221,925

PRINTED CIRCUIT BOARD

Donald W. Finley, Falls Township, Bucks County, and Robert B. Lewis, Lower Makefield Township, Bucks County, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 810,461, Jun. 27, 1977, Pat. No. 4,145,460.
This application Sep. 18, 1978, Ser. No. 943,096
Int. Cl.[2] H05K *1/02*
U.S. Cl. 174—68.5 8 Claims



1. A printed circuit board comprising:

(a) a 1–7 mil thick metal substrate having a first coating thereon and a through hole with non-linear, undercut walls in said first coating and substrate wherein said undercut is from about 1 to about 3 mils; and

(b) a dielectric film coating said first coating and said non-linear undercut walls of said through hole, said dielectric film having a thickness so as to resist dielectric breakdown at an applied voltage of 1500 volts.

4,221,926

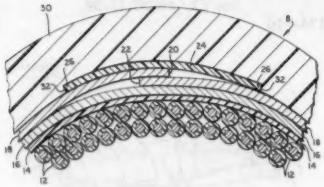
METHOD OF MANUFACTURING WATERPROOF SHIELDED CABLE

Randy G. Schneider, Norcross, Ga., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,715

Int. Cl.[2] H01B *13/22, 7/18;* **B32B** *31/30;* **B29C** *27/20*

U.S. Cl. 174—107 **9 Claims**



1. A method of manufacturing a shielded cable comprising the steps of:

(a) wrapping sheet metal about a cable core with the sheet metal edges overlapped to form a shield with a longitudinal seam;

(b) overlaying the shield seam with a strip of material of a type characterized by being shrinkable when heated above a predetermined temperature with the strip edges straddling the shield seam;

(c) extruding a plastic jacket onto the shielded core and strip of material at a temperaure in excess of said predetermined temperature; and

(d) cooling the plastic jacket by conducting heat from the jacket into an ambient medium and into the core through the strip of material and shield whereupon the strip of material becomes heated and shrinks drawing the edges towards the shield seam to leave gaps bounded by the strip edges, the shield and the jacket.

5. In a cable having a metallic shield surrounding a core and formed with a longitudinal seam, an extruded plastic jacket surrounding the metallic shield, and a strip of material positioned between the shield seam and the plastic jacket with side edges straddling the seam, the improvement comprising said strip of material being shrinkable when heated to its softening temperature, whereby during cable manufacture the side edges of the strip of material may be drawn towards the shield seam leaving the plastic jacket with a smooth surface adjacent the strip side edges.

4,221,927

VOICE RESPONSIVE "TALKING" TOY

Scott Dankman; Richard C. Levy, and Bryan L. McCoy, all of 1001 Spring St., Ste. 724, Silver Spring, Md. 20910

Filed Aug. 8, 1978, Ser. No. 932,069

Int. Cl.[2] A63H *3/33*

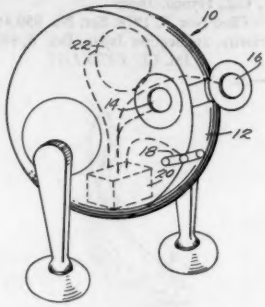
U.S. Cl. 179—1 VC **19 Claims**

1. A toy comprising:

a body;

actuator means, disposed within said body, for generating an actuation signal; and

audio generator means, disposed in said body and responsive to said actuation signal, for generating electrical tone pulses, said electrical pulses being pseudo-random both as to frequency composition and duration; and



transducer means responsive to said electrical tone pulses for generating audio output pulses indicative of said electrical pulses.

4,221,928

NOISE REDUCTION CIRCUIT FOR STEREO SIGNALS

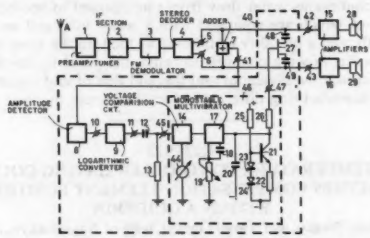
Nico V. Franssen, and Mathias H. Geelen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,587

Claims priority, application Netherlands, Jan. 25, 1978, 7800871

Int. Cl.[2] H04H *5/00*

U.S. Cl. 179—1 GM **7 Claims**



1. A noise reduction circuit for stereo signals comprising a control input terminal and first and second outputs, an amplitude detector connected to said control input terminal, a differentiator connected to said amplitude detector, and a controllable coupling circuit having a control input connected to said differentiator, said controllable coupling circuit being coupled to said first and second outputs for controlling the mutual signal coupling between said outputs, wherein said controllable coupling circuit minimizes said signal coupling when the amplitude of the output signal of the amplitude detector increases, and then automatically maximizes the signal coupling after the amplitude increase has ended.

4,221,929

SPEAKER SYSTEM

Yutaka Fukuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,822

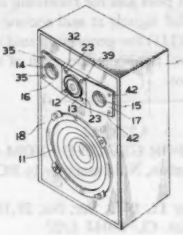
Claims priority, application Japan, Feb. 17, 1978, 53-19117[U]

Int. Cl.[2] H04R *1/02;* **H05K** *5/00;* **G10K** *11/00;* **A47B** *81/06*

U.S. Cl. 179—1 E **7 Claims**

1. A speaker system comprising a baffle board mounted with

a first speaker unit, a speaker unit mounting frame mounted on said baffle board so as to rise above the surface of said baffle board, a second speaker unit mounted in said frame, and at least one unit board mounted on said baffle board so as to adjoin to



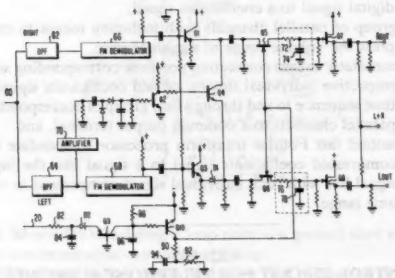
said frame, said unit board having a surface so designed as to substantially evenly connect the surface of said speaker unit mounting frame and the surface of said baffle board, thereby to prevent diffraction of the sound wave originated from the speaker unit provided in said frame.

4,221,930

FM DEFECT COMPENSATION APPARATUS

Yoshihiro Okuno, Tokyo, Japan, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,152
Int. Cl.[3] H04S 1/00; H04N 5/76
U.S. Cl. 179—1 GB **9 Claims**



1. In a system for processing a modulated signal wave in at least one main signal path and for providing a demodulated signal to a utilization means, the combination comprising:

detector means responsive to said modulated signal wave for detecting time intervals having substantially diminished levels of said modulated signal and for providing an output signal in response to the occurrence of such time intervals;

impedance means connected in said main signal path and responsive to said detector means output signal for providing an impedance which varies in accordance with the level of said detector means output signal; and

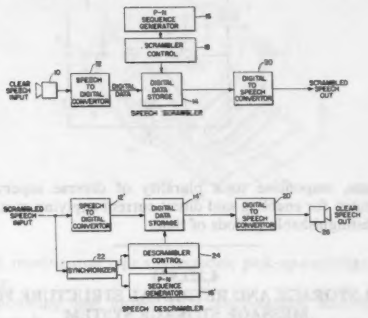
a deemphasis circuit connected between said impedance means and said utilization means, said deemphasis circuit having a frequency response determined by a capacitive element and a resistive element including said variable impedance.

4,221,931

TIME DIVISION MULTIPLIED SPEECH SCRAMBLER

Norman C. Seiler, West Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Oct. 17, 1977, Ser. No. 843,032
Int. Cl.[2] H04K 1/04, 1/06
U.S. Cl. 179—1.5 R **28 Claims**



1. A privacy communication system in which segments of data are randomly shifted in time prior to transmission, comprising

filter means for separating data signals into respective high frequency and low frequency channels;

encoder means, coupled to said filter means, for encoding the data signals in each channel into digital form;

first and second memory means connected to said filter means for storing said respective channels of data signals in segments of predetermined length;

first memory address means for generating address signals to address the storage locations in each segment of said first and second memory means for storage and retrieval of the data signals of each segment;

second memory address means for generating first and second random sequences of segment address signals to control the sequence of segment selection in said respective first and second memory means for storage and retrieval of data in random manner;

decoder means for decoding the data signals retrieved from said first and second memory means; and

summing means, coupled to said decoder means, for adding the first and second channels of data signals retrieved from said first and second memory means prior to transmission.

4,221,932

INFRARED REMOTE SIGNALING SYSTEM

Ronald E. Anglikowski, Bayville; George P. Hui, Middletown; Gregory Lese, Long Branch, and Donald H. Nash, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

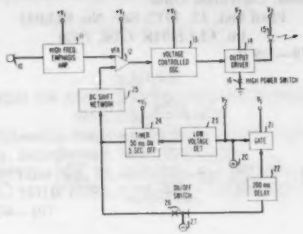
Filed Nov. 2, 1978, Ser. No. 957,298
Int. Cl.[2] H04Q 7/04
U.S. Cl. 179—2 EA **10 Claims**

1. A supervisory signaling system for frequency modulated carrier systems comprising

a voltage controlled oscillator,

means for applying an alternating current information signal to said oscillator,

means for applying direct current supervisory signals to said oscillator, and



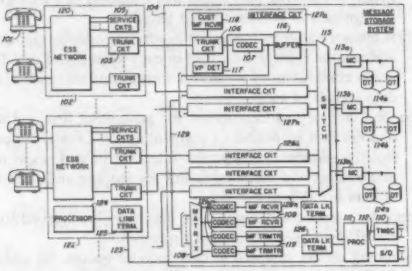
means, responsive to a plurality of diverse supervisory states, for enabling said direct current applying means for distinguishable periods of time.

4,221,933

DATA STORAGE AND RETRIEVAL STRUCTURE FOR A MESSAGE STORAGE SYSTEM

Ronald G. Cornell, 678 Forest Ave., Glen Ellyn, Ill. 60137; Bently A. Crane, 1700 Thompson Dr., Wheaton, Ill. 60187; Walter T. Hartwell, 4N085 Wild Rose Rd., St. Charles, Ill. 60174, and John G. Williams, 60 Grove Ave., Glen Ellyn, Ill. 60137

Filed Dec. 21, 1978, Ser. No. 971,726
Int. Cl.[2] H04M *1/64*
U.S. Cl. 179—6 C **12 Claims**



1. A message storage system comprising:

a plurality of interface means (**127***a* through **127***n* and **128***a* through **128***n*);

a plurality of independent storage means (**114***a* through **114***n*) responsive to storage control signals for storing and retrieving digitally encoded signals;

characterized in that

each of said interface means is responsive to interface control signals for receiving and transmitting information signals at a first port and for receiving and transmitting digitally encoded signals at a second port; and

said message storage system further comprises:

a plurality of controller means (**113***a* through **113***n*) corresponding to said plurality of independent storage means with each of said controller means being connected to one of said storage means, each of said controller means being responsive to controller command signals for generating said interface control signals, said storage control signals, and switch control signals;

switch means (**115**) connected to each of said controller means and to said second port of each of said interface means, and responsive to switch control signals from one of said controller means for connecting said one of said controller means to one of said interface means defined by said switch control signals from said one of said controller means;

said one of said interface means being responsive to interface control signals from said one of said controller means for receiving and transmitting information signals at said first port and for receiving and transmitting digitally encoded signals at said second port; and

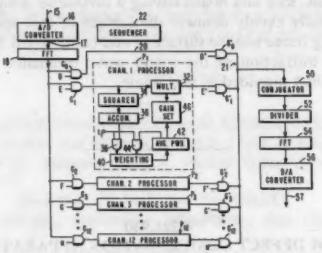
processor means (**111**) for generating said controller command signals and connected to each of said plurality of controller means.

4,221,934

COMPANDOR FOR GROUP OF FDM SIGNALS

Leonard N. Schiff, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,185
Int. Cl.[2] H04J *1/02*
U.S. Cl. 370—7 **9 Claims**



1. The combination of

a source of a digital input signal representing a group of frequency-division-multiplexed individual signals,

a first fast Fourier transform processor to translate said digital signal to a coefficients signal,

a group of parallel channels each including means to compress the volume range of signals therein,

commutator means connecting portions, corresponding with respective individual signals, of said coefficients signal in time sequence to and through said group of corresponding parallel channels to a common output terminal, and

a second fast Fourier transform processor to translate the compressed coefficients signal to a signal like the input signal but with each individual signal compressed in volume range.

4,221,935

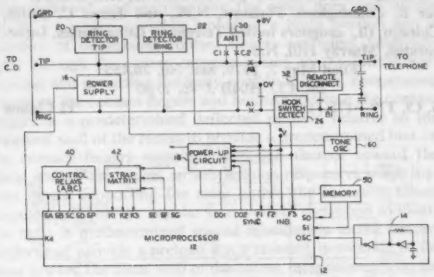
CONTROL CIRCUIT FOR TELEPHONE SUBSCRIBER STATION

John A. Barsellotti, and Fahim Ahmed, both of Guelph, Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,205
Claims priority, application Canada, Oct. 24, 1977, 289313
Int. Cl.[2] H04M *13/00*
U.S. Cl. 179—17 E **10 Claims**

1. A control circuit adapted for use with a station of a multiple party telephone line to provide single line circuit features for that line with said circuit being individually coupled to that station, said circuit including means for detecting ringing signals applied to the line from the office to which the line is coupled, logic means, means for enabling said logic means in response to the detection by said detecting means of ring signals said logic means including programmable means for storing data indicative of coded ringing signals and being operative when enabled to receive and analyze coded ringing signals applied to the line by comparison of the code of subsequent

ringing signals against said stored data to determine whether the station to be signaled, said sotred data being derived from



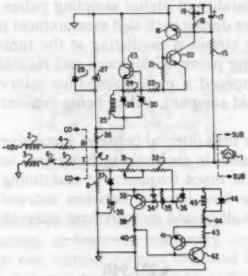
a preset indicator of ringing signal codes, and means responsive to a successful comparison for forwarding ringing signals to said station.

4,221,936

LOOP TO GROUND START CIRCUIT

Brian J. N. Vaughan, Ottawa, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed Jun. 8, 1979, Ser. No. 46,974
Claims priority, application Canada, Mar. 29, 1979, 324426
Int. Cl.[2] H04M *7/00*; H04Q *3/74*
U.S. Cl. 179—18 AD **10 Claims**



1. Means for translating a loop start to a ground start signal in a communication system comprising:

(a) latching switch means including first means for closing said switch means and second means for opening said switch means,

(b) means for connecting said switch means through a resistance means to ground from a first communication lead which is connected at a first end to a source of potential,

(c) first circuit means connected to the first communication lead, to a second communication lead, and to ground adapted to operate the means for closing said switch means when at least a predetermined proportion of said potential is externally applied to the second communication lead, and

(d) second circuit means connected across said resistance means and adapted to operate the means for opening the switch means after the switch means is closed,

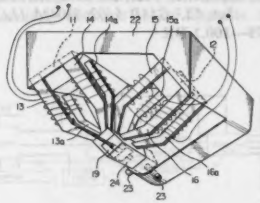
the communication leads including means for connecting a loop closing circuit between remote ends thereof for applying said proportion of said potential from the first communication lead to the second communication lead.

4,221,937

MOVING IRON TYPE CARTRIDGE

Isamu Ikeda, Tokyo, Japan, assignor to Fidelity-Research, Inc., Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,544
Int. Cl.[2] H04R *11/12*
U.S. Cl. 179—100.41 M **1 Claim**



1. A moving-iron type stereophonic pick-up cartridge comprising:

a mounting base formed of a non-magnetic material and including first and second planes oriented at an angle relative to one another;

first and second permanent magnets mounted to respective ones of said mounting planes so that proximately located ends of said magnets are both of one polarity and distantly located ends of said magnets are both of the opposite polarity;

two pairs of right-channel yokes associated with said first magnet, each right-channel yoke including an inner end connected to said first magnet, and an outer end surface, said outer end surfaces lying in a first end plane parallel to said first mounting plane,

the yokes of each respective pair of right-channel yokes having their inner ends connected to opposite polarities of said first magnet and their outer end surfaces spaced to form a gap therebetween, each pair of right-channel yokes forming a magnetic flow path across their associated gaps;

a right-channel coil wound in series around each of said right-channel yokes;

two pairs of left-channel yokes associated with said second magnet, each left-channel yoke including an inner end connected to said second magnet, and an outer end surface,

said outer end surfaces of said left-channel yokes lying in a second end plane parallel to said second mounting plane;

the yokes of each respective pair of left-channel yokes having their inner ends connected to opposite polarities of said second magnet and their outer end surfaces spaced to form a gap therebetween, each pair of left-channel yokes being magnetically connected across their associated gaps;

a left-channel coil wound in series around each of said left-channel yokes;

a damper case mounted to said base and extending equidistantly from all of said end surfaces through the magnetic flow paths of all of said gaps;

a damper disposed in said damper casing between said two pairs of right-channel yokes and between said two pairs of left-channel yokes;

a magnetic member held by said damper and extending through the magnetic flow paths of all of said gaps in spaced relation to said end planes within a region defined by said end planes; and

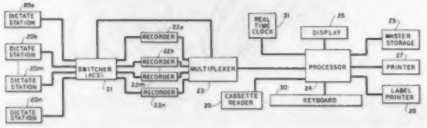
a cantilever mounted at one end to said magnetic member in alignment therewith and carrying a stylus at its other end.

4,221,938

CENTRAL CONTROL SYSTEM FOR A DICTATION DEVICE WITH PLURAL DICTATORS AND PLURAL RECORDERS

Said Mohammadioun; David A. Wittler; Theodore Titus, IV, and Luther C. Plunkett, Jr., all of Atlanta, Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Continuation of Ser. No. 782,947, Mar. 30, 1977, abandoned.
This application Mar. 26, 1979, Ser. No. 23,951
Int. Cl.[2] G11B *5/02;* H04M *11/10*
U.S. Cl. 179—100.1 DR 4 Claims



1. In a recording system having a first dictate station, a second dictate station, a first recorder having one of a plurality of recording media for the recording of dictation when said first recorder is in a recording mode of operation, a second recorder having another of said plurality of recording media for the recording of dictation when said second recorder is in a recording mode of operation, said plurality of recording media being selectively interchangeable between said first recorder and said second recorder, and connecting means for selectively and operatively connecting said first dictate station and said second dictate station to said first recorder or said second recorder for the recording of dictation:

first signal means for selectively providing one of a plurality of first signals in response to said connecting means being operative, said plurality of first signals including a first signal having a first predetermined characteristic which is in response to said connecting means operatively connecting said first dictate station to said first recorder, a first signal having a second predetermined characteristic which is in response to said connecting means operatively connecting said first dictate station to said second recorder, a first signal having a third predetermined characteristic which is in response to said connecting means operatively connecting said second dictate station to said first recorder, and a first signal having a fourth predetermined characteristic which is in response to said connecting means operatively connecting said second dictate station to said second recorder;

second signal means selectively operative in response to said recording mode of operation of said first recorder and said recording mode of operation of said second recorder while said connecting means is operative for providing a second signal having a characteristic determined by the duration of said recording mode to which said second signal means is responsive;

third signal means responsive to said connecting means becoming inoperative for providing a third signal having a characteristic determined by the time of occurrence of said third signal relative to a predetermined standard; and

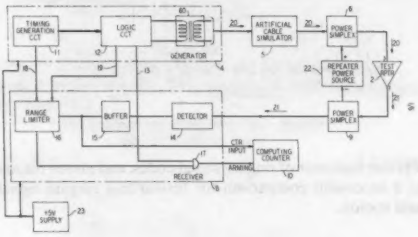
recording means selectively responsive to said first signal having said first predetermined characteristic and said first signal having said third predetermined characteristic, when said connecting means becomes inoperative, for recording said first signal to which it is responsive, said second signal, and said third signal on said one of said plurality of recording media, said recording means being alternately and selectively responsive to said first signal having said second predetermined characteristic and said first signal having said fourth predetermined characteristic, when said connecting means becomes inoperative, for recording said first signal to which it is responsive, said second signal, and said third signal on said another of said plurality of recording media.

4,221,939

METHOD AND APPARATUS FOR DETERMINING THE TUNED FREQUENCY OF A DIGITAL REPEATER

Peter B. Cunningham, Plaistow, N.H., and James C. Smith, Chicago, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1979, Ser. No. 36,455
Int. Cl.[2] H04B *3/46, 1/60*
U.S. Cl. 179—175.31 R 12 Claims



1. A method of externally determining the tuned frequency of the timing circuit of a digital repeater (2) comprising the step of

inserting a plurality of pulse bursts (30) into said repeater, each said burst being separated from one another, each said burst causing the timing circuit of said repeater to initially oscillate at the frequency of said burst and to continue oscillating after each said burst for a preselected measurement interval (25) at the tuned frequency of said timing circuit; and further CHARACTERIZED BY the steps of

inserting a plurality of digital sampling pulses (26, 27) into said repeater during each said measurement interval when said timing circuit is oscillating at the tuned frequency, said sampling pulses within each said measurement interval being spaced a preselected time interval from one another, said sampling pulses being regenerated by said repeater,

measuring the time interval between successive regenerated sampling pulses in each said measurement interval, and

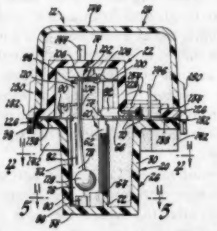
determining the tuned frequency of said timing circuit from the average time interval between successive sampling pulses from all of said measurement intervals.

4,221,940

SENSOR

Norman J. Roth, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 12, 1979, Ser. No. 2,946
Int. Cl.[2] H01H *35/14*
U.S. Cl. 200—61.45 R 6 Claims



1. A sensor, comprising, in combination, a housing of molded dielectric material having an elongated sector shaped

recess defined by a pair of angularly related side walls integrally joined by distal and proximal walls, the housing including an integral end wall closing one end of the recess and an integral lateral wall surrounding the other open end of the recess, a contact assembly including a body portion and a plurality of deflectable contact fingers extending longitudinally through the recess, integral means on the lateral wall locating and mounting the body portion thereon, cooperating means on the contact fingers and housing locating the contact fingers in a predetermined deflected position relative to the proximal wall of the recess to provide a predetermined bias on the contact fingers resisting deflection thereof toward the distal wall of the recess, an acceleration responsive mass, support means supporting the mass within the recess in biased engagement with the angular side walls of the recess to locate the mass in predetermined spaced relationship to the contact fingers and provide a preload force resisting movement of the mass toward the distal wall of the recess, integral means on the lateral wall locating and mounting the support means thereon, an acceleration pulse of predetermined amplitude and time moving the mass against the preload force into engagement with the contact fingers to deflect the contact fingers against the predetermined bias toward the distal wall and close a circuit across a source of power connected to the mass and the contact fingers, the deflection of the contact fingers damping movement of the mass to minimize contact bounce, and cover means covering the open end of the recess.

4,221,941

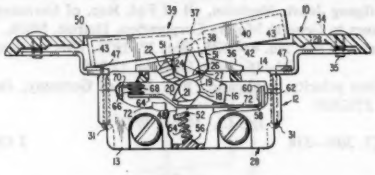
ROCKER SWITCH HAVING IMPROVED CONTACT-OPERATING MEANS

John M. Genovese, Trenton, N.J., assignor to GTE Sylvania Wiring Devices Incorporated, Trenton, N.J.

Filed Jan. 8, 1979, Ser. No. 1,495

Int. Cl.[2] H01H *21/04, 3/00*

U.S. Cl. 200—67 A **13 Claims**



1. In an electrical switch of the alternating-current type that includes a housing, at least one stationary contact element therein, at least one contact element mounted in the housing for movement between make and break positions in one of which it contacts and in the other is spaced from the stationary element, one end of the movable contact element being anchored in the housing and the other being free to move into and out of engagement with the stationary contact element, rockable actuator means of electrically insulative material mounted in the housing assembly for rocking movement about an unchanging axis extending transversely of the housing through a predetermined first angular distance between opposite extreme positions, a cam connected to the actuator means for rocking movement therewith and adapted to bias the movable contact element to at least the contact-breaking position of the movable contact element in response to rocking of the actuator means from one toward the opposite extreme position thereof, and over-center spring means in the housing for biasing the actuator means about its pivot axis to its respective opposite extreme positions, the housing having a stationary spring seat for one end of the spring and the actuator means having a finger rockable with the actuator about the pivot axis thereof and movable across a dead center occurring between the opposite extreme positions of the actuator means, the improvement comprising:

(a) rockable handle means mounted on the housing to rock about an unchanging axis parallel to and spaced from that of the actuator means through a second angular distance less than said first angular distance; and

(b) means on the handle and actuator means respectively movable into camming engagement with each other for biasing the actuator means, responsive to rocking of the handle means through said second angular distance, from said one of the extreme positions of the actuator means over-center to an intermediate position thereof in which the spring means becomes effective to bias the actuator means the remaining distance to its opposite extreme position.

4,221,942

APPARATUS AND METHOD FOR QUENCHING AN ARC IN A GAS FLOW CIRCUIT

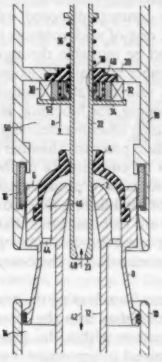
Walter Hertz, Erlangen-Buckenhof, and Jan Stroh, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,202

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658235

Int. Cl.[2] H01H *33/42*

U.S. Cl. 200—148 R **9 Claims**



1. In a gas flow circuit breaker including a permanent current contact system and an arc current contact system, each having first and second contacts, the first contact of the permanent current contact system and the first contact of the arc current contact system being electrically connected, and the second contact of the permanent current contact system and the second contact of the arc current contact system being electrically connected, the contacts in each system being supported for movement relative to each other in a manner such that, during opening the contacts of the permanent current contact system are first separated from a normal at rest position, followed by a separation of the contacts of the arc current contact system, between the contacts of which an arc is drawn, a method of improving quenching comprising, controlling the relative velocity of the contacts of said arc contact system as they are separated from each other in dependence on the arc current.

4,221,943

GAS-BLAST TYPE CIRCUIT INTERRUPTER

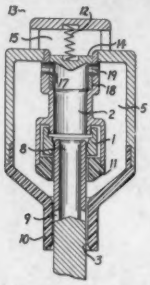
Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,551

Claims priority, application Japan, Mar. 24, 1977, 52-32905; Mar. 24, 1977, 52-32907; Mar. 24, 1977, 52-32933

Int. Cl.[2] H01H *33/70*

U.S. Cl. 200—148 R 3 Claims



1. A self-extinguishing gas-blast type circuit interrupter, comprising:

a casing containing an arc extinguishing gas in use;

means for defining an arc extinguishing chamber within said casing and containing an arc extinguishing gas in use, said arc extinguishing chamber having an opening in communication with the interior of said casing;

a pressure chamber disposed adjacent to said arc extinguishing chamber and having an opening opposite the opening of said arc extinguishing chamber;

a pair of separable contacts disposed within said pressure chamber, at least one of said contacts being dimensioned to extend into and be movable through said openings of said pressure chamber and said arc extinguishing chamber;

means, disposed in said movable contact and including a nozzle and an opening, for blocking, in cooperation with said arc extinguishing chamber defining means, fluid communication from said pressure chamber and said arc extinguishing chamber to said interior of the casing until said pair of contacts separate a predetermined distance from each other, and for establishing fluid communication from said pressure and arc extinguishing chambers to said interior of said casing when the contacts separate beyond said predetermined distance during the contact opening operation; and

pressure release means for releasing the arc extinguishing gas in said pressure chamber into the interior of the casing when the gas pressure within the pressure chamber exceeds a predetermined overpressure value.

4,221,944

DRIVING APPARATUS FOR ELECTRIC POWER CIRCUIT BREAKERS WITH RECTANGULAR HOUSING

Siegfried Jährig, and Reinhard Liebig, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

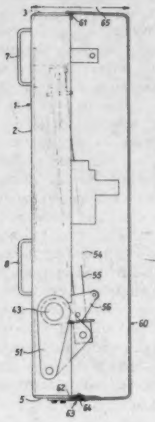
Filed Sep. 20, 1978, Ser. No. 943,927

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742773

Int. Cl.[3] H01H *9/02*

U.S. Cl. 200—303 6 Claims

1. A driving apparatus for medium voltage electric power circuit breakers comprising a substantially rectangular two-part housing, one part of which supports and holds the circuit breaker drive parts including one end of a spring accumulator and a separate shaft which is driven by the other end of the accumulator and the other part of which forms a cover for the first part, said first part having, as the principal supporting structure for the breaker drive parts, a tray-like rectangular housing having a back, four side walls, and a pair of transverse channel members fixed to and extending across at least the width of the back of the housing and serving as insulator supports, and said first part having a mechanical strength no greater than that required to withstand the forces exerted on it by the drive parts.



4,221,945

ILLUMINATED ELECTRIC SWITCHES

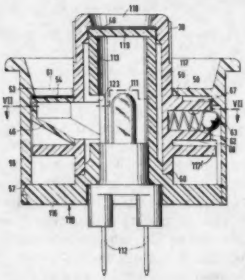
Dietmar Mobus, Treburr; Günter Ehrenberger, Rüsselsheim, and Wolfgang Jobst, Nauheim, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 864,635, Dec. 27, 1977. This application Feb. 16, 1979, Ser. No. 12,955

Claims priority, application Fed. Rep. of Germany, Jan. 1, 1977, 2702839

Int. Cl.[2] H01H *9/14*

U.S. Cl. 200—316 2 Claims



1. A rotary switch provided with a light source for indicating the location of the switch when installed, and its condition, said rotary switch comprising a stationary carrier member including a base plate and concentric outer and inner cylindrical walls extending therefrom, a manually operable switch knob having a hollow cylinder portion mounted for rotation about said inner cylindrical wall between an "OFF" position and an "ON" position, a radially extending flange formed with said cylinder portion and extending between said inner and outer cylindrical walls, detent means located between said switch knob and said carrier member for maintaining said

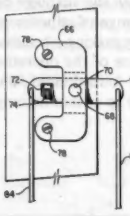
switch knob in said "OFF" and "ON" positions, a light bulb supported by said carrier member and located within said inner cylindrical wall and said cylinder portion of said switch knob, said switch knob having a first opening formed therein to permit light rays emitted by said light bulb to be projected through said opening longitudinally of said cylinder portion so as to indicate the location of the rotary switch, said inner cylindrical wall having an opening therein adapted to receive light projected laterally of said inner cylindrical wall from said bulb, and said switch knob cylinder portion having in the wall thereof an opening of sufficient circumferential extent, and so arranged, that rotation of said switch knob brings the opening in the switch knob into and out of radial alignment with the opening in said inner cylindrical wall but permits projected light from said bulb to pass through the opening in said cylinder portion in the "OFF" and in the "ON" positions of said switch knob, said knob having thereon a member carrying symbols which represent the different positions of the switch and which are illuminated by said laterally projected light, and said outer cylindrical wall having a masking flange which overlies said symbol-carrying member and is formed with an opening therein of dimensions sufficient to permit only one of said indicia to be rendered visible to a viewer in each position of rotation of said switch knob, and thereby indicate to a viewer that the switch is in an "ON" or "OFF" condition.

4,221,946

REMOTE SWITCH CONTROL

James L. Halstrum, #60 10,772 Guildford Dr. Surrey, British Columbia, Canada V3R 1W6

Filed Nov. 16, 1978, Ser. No. 961,420
Claims priority, application Canada, Aug. 29, 1978, 310254
Int. Cl.[2] H01H *3/52*
U.S. Cl. 200—331 **4 Claims**



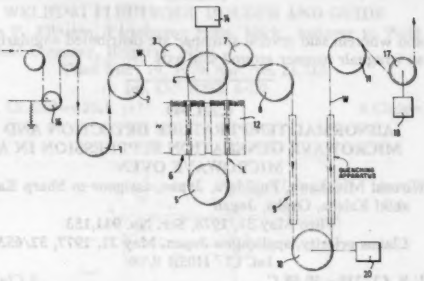
1. For use with a lighting switch having a actuating member projecting from a fascia plate, a switch adapter comprising a support plate having an inner peripheral edge extending partially around said actuating member, an outer peripheral edge delimiting said support plate, an undersurface extending between said inner and outer peripheral edges and arranged to abut said fascia plate and a recess in said undersurface extending between said inner and outer peripheral edges, fastening means to attach said support plate to said fascia plate and hole said undersurface in abutment with said fascia plate, an operating lever extending through said recess, said operating lever having an aperture adjacent one end thereof to receive said actuating member, pivot connecting means interconnecting adjacent overlying portions of said recess and said lever, said pivot connecting means including a bore in one of said overlying portions and a projection on the other of said overlying portions extending into said bore and operating means connected to said operating lever to effect pivotal movement thereof, whereby abutment of said undersurface with said fascia plate secures said operating lever within said recess and entraps said projection in said bore to pivotally interconnect said lever and support plate and thereby permit limited pivotal movement therebetween to operate said actuating member.

4,221,947

ANNEALING OF WIRE

Zbigniew Bonikowski, Buckinghamshire; Bruce H. Keen, Surrey; Dennis M. Salamon, Liverpool, and John A. Tennant, Merseyside, all of England, assignors to BICC Limited, London, England

Filed Mar. 10, 1978, Ser. No. 885,390
Claims priority, application United Kingdom, Mar. 14, 1977, 10670/77
Int. Cl.[2] H05B *5/08*
U.S. Cl. 219—10.41 **15 Claims**



1. A method of continuously heating wire by induction in which wire moving continuously in the direction of its length is caused to form at least one loop that encircles a part of a transformer core carrying a primary winding which is spaced from the loop or loops and which is connected to a source of alternating current by passing the advancing wire over at least two pulleys arranged on opposite sides of the transformer core; a short circuit electrical connection is effected between wire entering the loop or loops and wire leaving the loop or loops so that the or each loop forms at least a part of a secondary winding; and, when alternating current is caused to flow through the primary winding, a circulatory electric current is induced in, and flows around the or each loop and heats the continuously moving wire, wherein the short circuit electrical connection between wire entering the loop or loops and wire leaving the loop or loops is effected by guiding a portion of advancing wire on to one of the pulleys and guiding a portion of the advancing wire off said pulley in such a way that said portions of wire cross, but are not intertwined with, one another to form said loop or loops, and maintaining the advancing wire entering and leaving the loop or loops under such tension that the position in space of the crossover is substantially constant and that the crossed portions of the advancing wire are in continuous physical contact, the contact pressure at the position of crossover being sufficient to disturb any electrically non-conductive layers on the wire to provide clean portions for electrical contact.

4,221,948

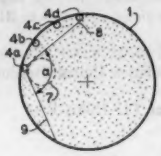
APPARATUS FOR SUBJECTING A MATERIAL TO ELECTROMAGNETIC WAVES

Olivier A. L. Jean, 12 A, Avenue Lavoisier, 78 Maisons-Laffitte, France

Filed Nov. 7, 1977, Ser. No. 849,182
Claims priority, application France, Nov. 17, 1976, 76 34594
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 A **2 Claims**

1. Apparatus for subjecting a material to microwaves, comprising: a microwave generator, a receptacle for the material and several antennae which are connected to the generator and which are in contact with the material in the receptacle, said receptacle having an axis, said several antennae extending

along a notional cylinder having the same axis as the receptacle and extending in the direction of a generatrix of the receptacle,



and wherein said several antennae are distributed angularly in an irregualr manner around said axis.

4,221,949

ABNORMAL TEMPERATURE DETECTION AND MICROWAVE GENERATION SUPPRESSION IN A MICROWAVE OVEN

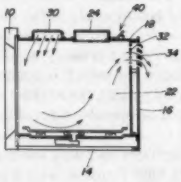
Hiroshi Minakawa, Fujiidera, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1978, Ser. No. 911,153

Claims priority, application Japan, May 31, 1977, 52/65341

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 C **6 Claims**



1. A microwave oven comprising a microwave oven housing for defining an oven cavity, a microwave generation means for applying microwave energy to a material disposed within said oven cavity, and an abnormally high temperature detection system for suppressing microwave generation when said oven cacity reaches an abnormally high temperature, said abnormally high temperature detection system comprising:

a hot air exhaustion opening formed in a wall of said oven housing;

a heat-sensitive film attached to said hot air exhaustion opening to close said hot air exhaustion opening, said heat-sensitive film being fusible when said oven cavity reaches an abnormally high temperature in order to open said hot air exhaustion opening;

a heat-sensitive fuse disposed outside of said oven cavity and at a position near said hot air exhaustion opening; and

a control circuit means for suppressing the microwave generation when said heat-sensitive fuse is fused.

4,221,950

METHOD AND APPARATUS SUITABLE FOR HEATING RELATIVELY POORLY CONDUCTING SUBSTANCES

Kurt Lamberts; Jürgen Leppin, both of Clausthal-Zellerfeld; Berndt Greten, and Harry Neubauer, both of Springe, all of Fed. Rep. of Germany, assignors to Bison-Werke, Bahre and Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,562

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722348

Int. Cl.[2] H05B *9/04*

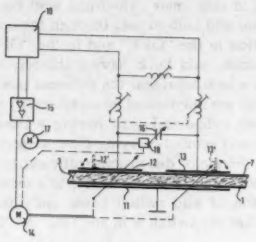
U.S. Cl. 219—10.81 **16 Claims**

1. A method of heating a continuously moving mass of relatively poorly electrically conducting material of variable electrical characteristics and height by dissipating relatively high frequency electrical energy from a generator in a load circuit including an operational capacitor and an auxiliary capacitor connected together to the high frequency generator the method comprising, the steps of:

(a) continuously moving the mass of material through a space between the electrodes of the operational capacitor;

(b) continuously monitoring a parameter of the high frequency generator related to the power output from the generator to the load circuit;

adjusting the capacity of the load circuit to adjust the value of said parameter to a value corresponding to a predetermined power dissipation in the moving mass of material;



(c1) said adjusting step (c) including: adjusting the auxiliary capacitor in response to deviations of the monitored parameter from its desired value to change the capacity of the load circuit whereby to effect a fine compensation for changes in the load circuit brought about by variations in the electrical characteristics and height of said moving mass of material and to restore said parameter to its predetermined value;

(c2) sensing when the auxiliary capacitor has reached the limits of its range of adjustment; and

(c3) as necessary making a relatively coarse adjustment of the capacitance of the operational capacitor to restore the parameter to its desired value and to reset the auxiliary capacitor to within its range of adjustment.

4,221,951

SCREEN WELDING MACHINE

Connolly, James D., 410 Johnston St., Princeton, W. Va. 24740

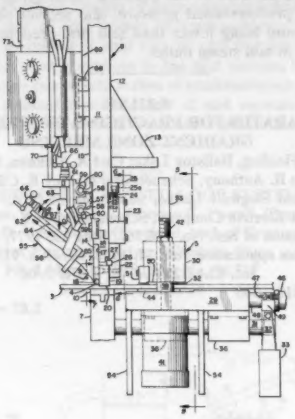
Filed Oct. 10, 1978, Ser. No. 949,640

Int. Cl.[2] B23K *9/225, 37/04;* **B21F** *15/08, 27/10*

U.S. Cl. 219—56 **14 Claims**

1. A machine for welding spaced longitudinal wires to spaced transverse rods, comprising means for welding transverse rods in succession to the longitudinal wires at a welding station, ram means acting in clamping independently of said welding means for clamping a transverse rod to said longitudinal wires at said station, and feeding means in advance of said station for incrementally pushing the longitudinal wires therethrough, said feeding means including clamping means reciprocable relative to said welding station, said clamping means alternately clamping said longitudinal wires and advancing toward said welding station for incrementally feeding said longitudinal wires through said welding station and releasing said longitudinal wires and retracting therealong from said

welding station, and said ram means clamping said longitudinal wires against longitudinal movement during both welding of a



transverse rod thereto and retracting of said clamping means therealong.

4,221,952

ELECTRIC DISCHARGE MACHINING METHOD

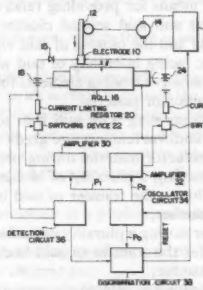
Kunihiko Sato, Owari-Asahi; Tetsuro Urata, Nagoya; Mitsugi Kawano; Terumasa Jinba, both of Fukuyama; Tetsuhiro Asamoto, Nagoya, and Takeo Uebayashi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 930,010

Claims priority, application Japan, Aug. 11, 1977, 52-96513; Aug. 11, 1977, 52-96514

Int. Cl.[2] B23P *1/14*

U.S. Cl. 219—69 G **4 Claims**



1. In a method wherein a working gap is formed between an electrode and a work piece, said working gap is adjusted by controlling the feeding of said electrode, and said electrode and a work area of said work piece are moved relative to each other, whereby to give a satin finish to a surface of said work piece, the improvement comprising the steps of:

applying across said working gap voltage pulse trains each comprising a plurality of high voltage pulses and a low voltage pulse;

controlling the feeding of said electrode by said low voltage pulse to reduce said working gap until a low voltage discharge is caused;

detecting a working current caused by the application of said low voltage pulse so as to detect said low voltage discharge from a change in said working current during said low voltage pulse application;

stopping the control of feeding of said electrode in response to the detection of said low voltage discharge during the control of feeding of said electrode; and

applying said high voltage pulses for a predetermined period of time to cause high voltage discharges, whereby to give a satin finish to the surface of said work piece by discharge machining.

4,221,953

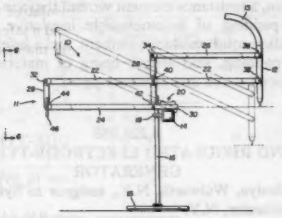
WELDING ELECTRODE HOLDER AND GUIDE

John P. Kiilunen, Farmington Hills, Mich., assignor to Weld Mold Company, Brighton, Mich.

Filed Mar. 19, 1979, Ser. No. 21,715

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—125.1 **6 Claims**



1. A welding electrode holder comprising a vertically disposed mounting member;

a horizontal member slidably attached adjacent one end to said vertically disposed mounting member;

a frame means arranged in a vertical plane and intermediate its ends rotatably and universally mounted upon the other end of said horizontal member;

said frame means having a pair of parallelogram shaped sections with one section affixed adjacent to and vertically offset from the other section such that the bottom of said one section is common to and an extension of the top of said other section and the one side of said one section is common to and an extension of the one side of said other section;

hinge means located at each of the corners of each of said pair of sections to permit said sections to form substantially all possible parallelogram shapes;

electrode means forming one end of said frame means; and

handle means attached to the end of said frame means opposite from and at all time parallel to said electrode means for selectively modifying the shape of said sections, whereby manual rotation of said handle means to a predetermined inclination effects a corresponding and simultaneous inclination of said electrode means, manipulation of said handle means adjusts said electrode vertically, and lateral angular adjustment of said handle means tilts said electrode to a corresponding angle.

4,221,954

HEATED MUFF

Florence Cohen, 6700 E. Thomas Rd., Scottsdale, Ariz. 85251

Filed Apr. 17, 1978, Ser. No. 896,726

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—212 **3 Claims**

1. Structure with a hand-graspable heated core, comprising:

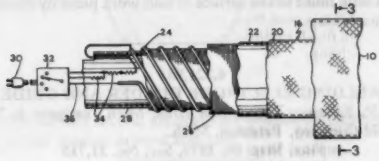
(a) an elongated envelope of thermal material with hand access openings at opposite ends of the envelope, leading to the interior thereof;

(b) a cylindrical core longitudinally slidably insertable into the interior of said envelope, and dimensioned and config-

ured to be grasped by one or both hands of the user, at the user's option simultaneously, within said interior;

(c) means in said core to heat said core;

(d) whereby the core may be grasped gently for moderate warming or tightly for enhanced direct transfer of heat to the hand resulting in the user feeling a greatly increased heating effect;



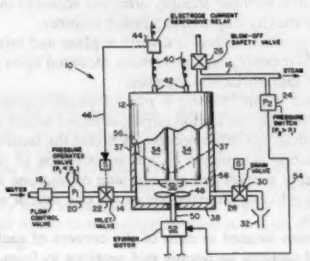
(e) said core having a centrally elongated member fixed therein, a resistance element wound thereon, heat distributive padding of incombustible insulative material surrounding solid resistance element, and a safety sheath over said padding, said sheath being of material electrically non-conductive and moisture-proof.

4,221,955

DEMAND REGULATED ELECTRODE-TYPE STEAM GENERATOR

Larry J. Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,347
Int. Cl.[2] H05B 3/60; F22B 1/30
U.S. Cl. 219—287 **2 Claims**



1. A steam generator comprising:

(a) a pressure vessel having a feed water inlet and a steam outlet;

(b) a pair of immersion heating electrodes extending into said vessel, said electrodes extending adjacent the sides of said vessel and being spaced above the bottom thereof;

(c) stirring means in said pressure vessel adjacent the bottom thereof and vertically spaced below said heater electrodes for driving the water in the vessel through a circular path of travel with sufficient velocity to raise the level of the water adjacent the sides of the vessel up to said heating electrodes whereby more of said heating electrodes is immersed when said stirring means is operating than and when said stirring means is not operating;

(d) a pressure switch connected to said stirring means and acting responsive to the pressure in said steam outlet being below or above a to steam outlet first predetermined pressure and to respectively start or stop said stirring means;

(e) water level control means including a valve in said feed water inlet acting responsive to current flow through said heating electrodes to open or close said feed water inlet; and

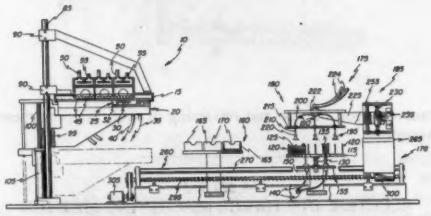
(f) a pressure operated valve in said feed water inlet upstream from said valve, said pressure operated valve being adapted to open or close said feed water inlet responsive to the pressure in said pressure vessel being below a second predetermined pressure, said second predetermined pressure being lower than said first predetermined pressure in said steam outlet.

4,221,956

APPARATUS FOR PRACTICING TEMPERATURE GRADIENT ZONE MELTING

John O. Fielding, Ballston Lake; Carl A. Erikson, Schenectady; Thomas R. Anthony, Schenectady; Harvey E. Cline, Schenectady, and Siegwalt Ludke, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 796,367, May 12, 1977, abandoned.
This application Jun. 21, 1978, Ser. No. 917,493
Int. Cl.[3] B25J 15/06; F27B 9/06
U.S. Cl. 219—388 **31 Claims**



1. Apparatus for the processing of one or more bodies of semiconductor material by temperature gradient zone melting, said apparatus including:

(a) a closable work chamber in which the temperature gradient zone melting process is practiced, said closable work chamber comprising a first closure member having a heat source therein and a second closure member having a heat sink therein;

(b) means disposed in said work chamber for supporting said bodies of semiconductor material therein;

(c) a first actuator means for providing relative movement between said first and said second closure members to effect the opening and the closing of said work chamber;

(d) said heat source facing internally of said work chamber and comprising radiative heating elements for heating said bodies of semiconductor material;

(e) the heat sink cooperating with said heat source to produce a relatively uniform temperature gradient within said bodies of semiconductor material during processing;

(f) first means for storing a plurality of bodies of semiconductor bodies prior to the transfer of said bodies to said closable work chamber;

(g) second means for storing a plurality of bodies of semiconductor bodies after the transfer of said bodies from said closable work chamber;

(h) manipulative means for selectively engaging and supporting a plurality of bodies of semiconductor material in transit from said first storage means to said closable work chamber, and from said closable work chamber to said second storage means;

(i) drive means for moving said manipulative means to and from said first storage means, said second storage means and said said closable work chamber, and

(j) means for operating said manipulative means for engaging and releasing a plurality of bodies of semiconductor material,

(k) said manipulative means comprising

(1) means including at least one vacuum line adapted for communication with a vacuum source for selectively attaching to said bodies of semiconductor material, a single one of said bodies of semiconductor material

being engageable and supportable by said vacuum line at one end thereof through suction, and

(2) a second actuator for placing said attaching means in contact with said bodies of semiconductor material, said single one of said bodies of semiconductor material being supported at said end of said vacuum line by application of a vacuum to the said vacuum line, and said single one of said bodies of semiconductor material being released from said end of said vacuum line by removal of the vacuum from said vacuum line.

4,221,957

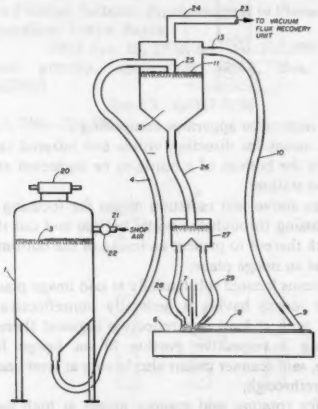
WELDING FLUX CLOSED LOOP SYSTEM

John J. Barger, Ringgold, Ga.; Waylon C. Powell, Chattanooga, and James R. Underwood, Cleveland, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 1, 1979, Ser. No. 16,717

Int. Cl.² B23K *9/18*

U.S. Cl. 219—73.2 **5 Claims**



1. A system for supplying flux to a submerged welding arc, including;

a work surface upon which there is an electric arc welding operation;

a charged electrode suspended a predetermined distance above the work surface to sustain the electric arc between the end of the electrode and the work surface;

a rechargeable container for an inventory of welding flux mounted at a convenient location relative to ground level and at a predetermined lateral distance from the work surface;

a chamber mounted at a predetermined elevation above the electric arc;

a conduit connecting the reservoir of flux and the chamber above the electric arc;

a source of fluid pressure connected to the reservoir to force flux from the reservoir to the elevated chamber;

a conduit system connecting the elevated chamber to a location adjacent the electric arc, including,

(a) an open-topped box mounted between the elevated chamber and the electric arc,

(b) a conduit connected to the elevated chamber and extending down into the open top of the box,

(c) compartments mounted within the open-topped box to divide the flux received from the elevated chamber into separate portions,

(d) and a conduit for each of the flux portions connected to each compartment of the box through which the flux portion gravitates to and is deposited over the electric arc;

and a vacuum system arranged to collect and conduct excess flux behind the moving electrode to the elevated chamber.

4,221,958

ELECTRONIC EQUIPMENT FOR ACCESSING BY KEY OPERATION

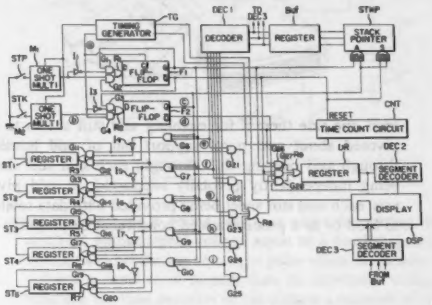
Seiji Saito, Yokohama, and Taigan Shintani, Yotsukaido, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1977, Ser. No. 841,208

Claims priority, application Japan, Oct. 28, 1976, 51-129844

Int. Cl.² G07C *1/10*; G06M *3/06*

U.S. Cl. 235—92 T **12 Claims**



1. Electronic equipment comprising:

a first key switch;

a second key switch;

signal producing means for producing a first signal responsive to a first operation of said first key switch, and for producing a second signal responsive to a second operation of said first key switch;

storage means having a plurality of addresses for storing data;

address signal generating means for generating a different address signal for every operation of said second key switch to sequentially advance the addressing of said storage means in one direction in response to the operation of said second key switch when the first signal from said signal producing means is produced, and to sequentially advance the addressing of said storage means in the reverse direction in response to the operation of said second key switch when the second signal from said signal producing means is produced;

means for causing said storage means to store data into the address indicated in accordance with the address signal from said address signal generating means, said means being operable in response to the operation of said second key switch when the first signal from said signal producing means is produced; and

means for reading out the data stored in said storage means in accordance with an address signal from said address signal generating means, said means being operable in response to the operation of said second key switch when the second signal from said signal producing means is produced.

4,221,959

CHECKING DEVICE FOR CHECKING THE FOOD INTAKE

Eva-Maria Sessler, Dachauerstrasse 33, 8061 Unterbachern, Fed. Rep. of Germany

Filed Feb. 28, 1978, Ser. No. 882,123

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709081

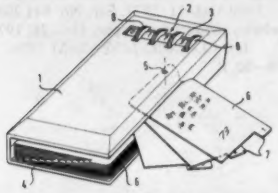
Int. Cl.² G06M *1/02*

U.S. Cl. 235—92 AC **3 Claims**

1. A checking device for checking food intake, comprising a

housing; an electronic counter disposed in the housing and including an electronic display visible outside of the housing for displaying data with respect to food or with respect to a predetermined constituent or property of food;

a register disposed in the housing; said register being comprised of a plurality of stiff sheets; a pivot support in said housing for said stiff sheets; said housing being open at at



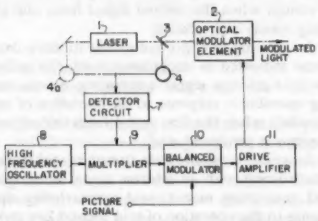
least one side thereof for enabling said stiff sheets to be pivoted about said pivot support out of said housing through said opening therethrough; each said stiff sheet being independently pivotally supported on said pivot axis; each said stiff sheet being provided with data related to food or to a predetermined constituent or property of food.

4,221,960

METHOD FOR STABILIZING A MODULATED LIGHT RAY

Kiyoshi Maeda, Takatsuki, and Kyohei Fujisawa, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 13, 1978, Ser. No. 960,058
Claims priority, application Japan, Nov. 28, 1977, 52-142507
Int. Cl.[2] H01S *3/10*; G11B *7/00*
U.S. Cl. 250—205 **1 Claim**



1. A method for stabilizing the intensity of a light ray emitted by a light source and modulated in an optical modulator element according to control signals, comprising:

detecting the change of intensity of the light ray before it enters the optical modulator element and producing correction signals in accordance therewith;

amplitude-modulating a high-frequency carrier by the correction signals in reverse phase to the change of intensity of the light ray to produce corrected carrier signals;

amplitude-modulating the corrected carrier signals by the control signals to produce modulator signals; and

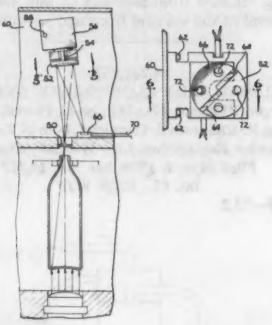
modulating the light ray by the modulator signals in the optical modulator element.

4,221,961

ELECTRONIC BOTTLE INSPECTOR HAVING PARTICLE AND LIQUID DETECTION CAPABILITIES

John J. Peyton, Santa Barbara, Calif., assignor to Industrial Automation Corporation, Goleta, Calif.

Filed Oct. 23, 1978, Ser. No. 953,865
Int. Cl.[2] G01N *21/24*
U.S. Cl. 250—223 B **18 Claims**



1. Bottle inspection apparatus comprising

radiation means for directing visible and infrared radiation through the bottom of a bottle to be inspected at an inspection station;

lens means above said radiation means for focusing visible light passing through the bottle bottom and out through the neck thereof to present an image of the bottom of the bottle at an image plane;

scanner means located substantially at said image plane, said scanner means having a generally nonreflective background with at least one reflective segment thereon for reflecting a respective portion of an image focused thereon, said scanner means also having at least one opening therethrough;

a motor for rotating said scanner means at high speed to rotate said reflective segment about a scanner axis to scan the image focused thereon;

a first detector positioned to receive visible radiation reflected by said scanner means and to provide an electrical signal responsive thereto for sensing the presence of opaque foreign objects in bottles being inspected; and

a second detector positioned behind said scanner to receive infrared radiation passing through said opening in said scanner and to provide an electrical signal responsive thereto for sensing the presence of an aqueous solution in the bottle.

4,221,962

FIBER-OPTIC MOISTURE SENSOR FOR COMPOSITE STRUCTURES

Gregory T. Black, Los Angeles, and Robert A. Johnson, Garden Grove, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

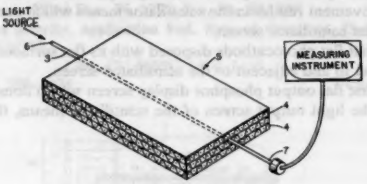
Filed Apr. 24, 1978, Ser. No. 899,222
Int. Cl.[2] G02B *5/14*
U.S. Cl. 250—227 **6 Claims**

1. A method of monitoring and detecting the intrusion of moisture into a body of a fully cured laminated composite structure, comprising:

a. embedding and curing a radiation carrier inside said body of said composite structure, said radiation carrier having at least two finite ends extending to the edge of or out of said body of composite structure,

b. injecting radiation into one end of said carrier, said radia-

tion passing therethrough to emerge from the other end thereof, and



c. measuring the radiation emerging from said other end of said carrier.

4,221,963

LIGHT CHOPPING DISC FOR A PULSE GENERATOR

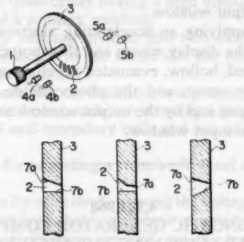
Akihiro Fushimi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 13, 1978, Ser. No. 915,098

Claims priority, application Japan, Jun. 13, 1977, 52/76823[U]

Int. Cl.² G01D *5/34*

U.S. Cl. 250—231 SE **6 Claims**



1. In a pulse generator of the type having a light emitting element and a light detecting element disposed on opposite sides of a disc having a plurality of apertures therein and a rotatable operating member coupled to said disc through a gear drive mechanism so that rotation of said operating member through one revolution will cause rotation of said disc through more than one revolution to intermittently interrupt the light impinging said detecting element from said emitting element, the improvement comprising:

each said aperture having a tapered inner surface so that the end of said aperture facing said light emitting element is larger than the end of said aperture facing said light receiving element.

4,221,964

CONTROL SYSTEM FOR MASS SPECTROMETER

Fritz H. Schlereth, Baldwinsville, and Gary E. Lanpher, Minoa, both of N.Y., assignors to Inficon Leybold-Heraeus Inc., East Syracuse, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,096

Int. Cl.² B01D *59/44*

U.S. Cl. 250—290 **11 Claims**

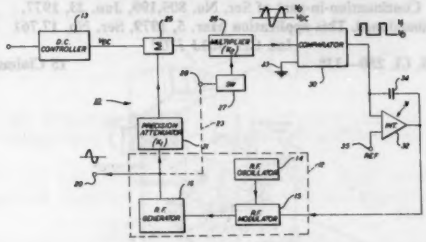
1. In a tunable control filter for use in a mass spectrometer of the type wherein an alternating voltage having a fixed frequency is applied to at least one electrode of the filter and the amplitude of the alternating signal is varied in response to the level of a master DC voltage signal provided by the spectrometer controller, the improvement comprising

a frequency generator for providing an alternating voltage to the filter which is at a fixed frequency,

a modulator for regulating the amplitude of the generator output signal in response to a gain control signal,

attenuator means for sampling the output of said generator and providing an attenuated voltage output in response thereto,

adder means for summing the attenuated voltage output and the DC master signal voltage to provide a resultant voltage signal wherein the attenuated voltage is riding the variable DC master signal voltage,



comparator means in series with said adder for setting the resultant output signal voltage equal to a fixed threshold voltage and producing an output pulse when the resultant voltage is equal to or greater than the threshold voltage whereby the time duration of the pulse is a measure of the peak amplitude of the generator output voltage, and

integrator means for receiving the output pulses of said comparator means and providing a gain control signal in response to said pulses that is applied to the modulator for maintaining the peak amplitude of the generator at a precise level that is proportional to the DC master signal.

4,221,965

SCANNING TYPE ELECTRON MICROSCOPE

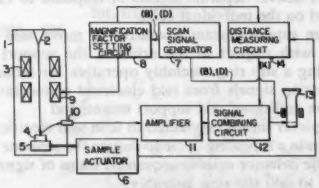
Tadao Konishi, Katsuta, and Yoshiharu Utsumi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 21, 1978, Ser. No. 934,716

Claims priority, application Japan, Aug. 23, 1977, 52/101221

Int. Cl.² G01M *23/00*

U.S. Cl. 250—311 **4 Claims**



1. A scanning type electron microscope comprising:

means for generating an electron beam;

means for bidimensionally scanning a sample with said electron beam to derive an information signal inherent to said sample from said sample;

means for displaying an image of said sample based on said information signal;

means for tilting said sample by any tilt angle relative to said electron beam and holding said sample in the tilted position;

means for rotating said sample by any azimuth angle and holding said sample in the rotated position;

means displaying, on said image, first and second marks corresponding to different first and second points on said sample in superposition to said image; and

means for calculating a distance between said first and sec-

ond points based on coordinates of said first and second marks, said tilt angle and said azimuth angle.

4,221,966

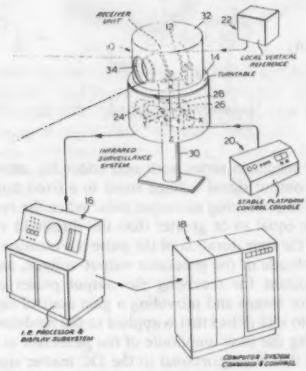
INFRARED SURVEILLANCE SYSTEM

Howard S. Kerr, Scarborough; John R. Kettlewell, Brampton, both of Canada; John B. Driffield, deceased, late of Toronto, Canada, and Margaret D. Driffield, administrator, Lisle, Canada, assignors to Spar Aerospace Limited, Toronto, Canada

Continuation-in-part of Ser. No. 809,199, Jun. 23, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,761

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—338 **15 Claims**



1. A high-resolution optical system for detection of an object by detecting infrared radiation therefrom in a wide wavelength band within 3 to 14 micrometers, comprising:

(a) optical means for focusing said radiation on a focal surface, and including a spherical mirror spaced by its focal length from said surface and including a Schmidt aspheric corrector located between the object and the mirror;

(b) a radiation detector array comprising at least 50 radiation detector cells positioned to lie in said focal surface and having electrical connections extending from each of the cells to deliver separate signals in response to radiation focused on the individual cells;

(c) system support means operative to move said optical means with respect to the azimuth, the support means including a slip ring assembly operative for sequentially transferring signals from said electrical connections to a location outside of said support means; and

(d) multiplexer means connected to scan said electrical connections in a repeating cycle to reduce the separate signals from the detector cells to sequential trains of signals connected to said slip ring assembly.

4,221,967

GAMMA RAY CAMERA

Shih-Ping Wang, Los Altos, and Charles D. Robbins, Los Altos Hills, both of Calif., assignors to Diagnostic Information, Inc., Sunnyvale, Calif.

Filed Mar. 10, 1978, Ser. No. 885,169

Int. Cl.[2] G01T *1/20;* **H01J** *31/50*

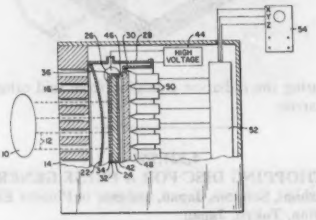
U.S. Cl. 250—363 S **21 Claims**

1. An improved scintillation camera of the type having a radiation collimator, scintillator means aligned with the collimator for converting radiation passing through the collimator and impinging upon the scintillator means into a corresponding light pattern, the scintillator means including a scintillator screen and an output screen for displaying the light patterns, a plurality of photo-electric detectors disposed in view of substantially co-extensive portions of the output screen, and means connected to the photo-electric detectors for receiving signals emitted from them and for translating such signals into relatively displaced images of said light patterns, wherein the improvement resides in the scintillator means which comprise:

a flat scintillator screen,

a first flat photocathode disposed with its flat surfaces parallel to and adjacent to the scintillator screen,

a first flat output phosphor display screen which constitutes the light output screen of the scintillator means, the display screen having its flat surfaces parallel to and spaced apart from the flat surfaces of the photocathode and on its side opposite from the scintillator screen,



an output window on which the display screen is mounted,

a metallic input window,

means for applying an accelerating electrostatic potential between the display screen and the photocathode, and

an open ended, hollow, evacuated envelope surrounding the scintillator screen and the photocathode and which is closed at one end by the output window and at the other end by the input window.

4,221,968

X-RAY DIAGNOSTIC GENERATOR COMPRISING AN INVERTER SUPPLYING THE HIGH VOLTAGE TRANSFORMER

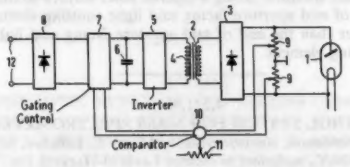
Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,191

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802424

Int. Cl.[2] H05G *1/30*

U.S. Cl. 250—402 **2 Claims**

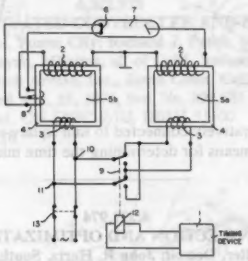


1. An x-ray diagnostic generator comprising an x-ray tube, a high voltage transformer supplying the x-ray tube, an inverter connected to the input of the high voltage transformer, a mains rectifier supplying power to the inverter, and control means for controlling for the x-ray tube voltage, characterized in that a smoothing circuit (6) is connected to the input of the inverter (5), and a phase gating control (7) controlling the duty cycle of the current pulses supplied to the smoothing circuit (6), said phase gating control (7) forming the control means for controlling the x-ray tube voltage.

4,221,969
X-RAY VOLTAGE SUPPLY

Manfred Schmidt, Karlsruhe, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,080
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2820773
Int. Cl.[2] H05G *1/14, 1/56*
U.S. Cl. 250—421 2 Claims



1. An X-ray voltage supply for providing a high cathode to anode and a low cathode heating voltage to an X-ray tube having a cathode and anode, said voltage supply comprised of:

a high voltage transformer having a high voltage secondary winding and a primary winding;

said secondary winding divided into two secondary coils, one coil connected to the anode and the other coil connected to the cathode;

said primary winding divided into two primary coils,

a first and second core, each core forming a magnetic circuit with one of said secondary coils and one of said primary coils;

timing means for providing a switch-off signal and a switch-on signal;

phasing means for selectively phasing the voltages across the secondary coils so that in response to a switch off signal, the secondary voltages are 180° out of phase, canceling each other so that no high voltage appears between cathode and anode of the tube, resulting in no X-ray emission, and in response to a switch-on signal, said voltages are in phase and additive across cathode and anode, resulting in X-ray emission;

a low voltage secondary winding associated with the same core as the secondary high voltage coil connected to the cathode, for providing low voltage to heat the cathode during both phase relationships.

4,221,970
PANORAMIC DENTAL X-RAY MACHINE EMPLOYING SELECTABLE MODE FILM DRIVE MECHANISM WITH SHIFTABLE CAM FOLLOWERS

Anthony Ciavattoni, Staten Island, N.Y.; John J. Flynn, Monmouth-Hazlet, N.J., and Theodore Weber, Jr., Elmsford, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 18, 1979, Ser. No. 49,242
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—439 P 11 Claims

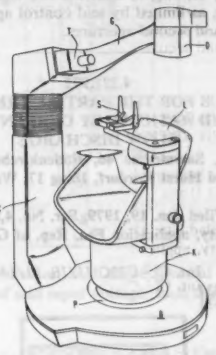
1. In a panoramic dental X-ray machine for providing continuous and discontinuous radiographs of dental arch areas of a patient seated in a chair which travels during at least a portion of said continuous and discontinuous modes of radiographing, said X-ray machine comprising

(a) a tubehead containing an X-ray source and means to power said source,

(b) a camera assembly comprising a drum including X-ray film disposed therearound for activation by said X-ray source, said tubehead and said camera assembly rotating as a unit about said patient,

(c) film drive means mounted within said camera assembly for rotating said drum and film at controlled rates of drive in accordance with travel of said chair and selected mode of radiographing while said tubehead and camera assembly circularly orbit said patient, the combination therewith of the improvement to said film drive means comprising

a pair of stationary cams, one of said cams having a groove disposed therein for providing said continuous image and other of said cams having another groove disposed therein for providing said discontinuous image,



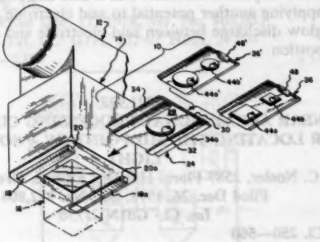
rotatable link means carrying a pair of shiftable cam followers, said rotatable link means having an input member caused to be rotated at a constant speed and an output member rotating at a non-constant speed in accordance with rotatable engagement of a cam follower of one of said pair of shiftable cam followers within one of said grooves,

said film drive means rotating in response to rotation of said output member of said link means.

4,221,971
PROTECTIVE SHIELD DEVICE

William Burger, 48 Roland Rd., Jamestown, N.Y. 14701

Filed Jan. 15, 1979, Ser. No. 3,264
Int. Cl.[3] G21F *5/04*
U.S. Cl. 250—505 6 Claims



1. A protective shield device for mounting externally of an x-ray machine in the path of an x-ray beam generated thereby, said shield device comprising:

a first support means fixed to depend from said machine;

a first shield plate having a control aperture bounded by material opaque to x-rays, said first shield plate being supported by said first support means to removably arrange said control aperture in alignment with said beam for limiting the size and configuration of said beam to that

of said control aperture, said first shield plate having second support means depending therefrom; and

a second shield plate supported by said second support means for sliding movement, said second shield plate having first and second apertures bounded by material opaque to x-rays and spaced apart in the direction of said sliding movement for selective alternate positioning in alignment with said control aperture, said first and second apertures being sized for receipt within the bounds of said control aperture and differing one from another and when positioned within the bounds of said control aperture selectively serving to limit the size and configuration of said beam, as limited by said control aperture, to that of said first and second apertures.

4,221,972

APPARATUS FOR THE PARTIAL TREATMENT OF ELONGATED ARTICLES BY CURRENT INTENSIVE GLOW DISCHARGE

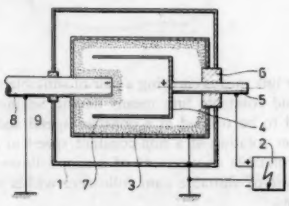
Werner Oppel, Saarstrasse 46, Rodenkirchen, Fed. Rep. of Germany, and Horst Rordorf, Ifang 17, Weiningen, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,837

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803331

Int. Cl.[2] C23C *11/10, 11/14*

U.S. Cl. 250—531 **5 Claims**



1. Apparatus for the metallurgical treatment of a selected portion of an elongated article, by glow discharge heating comprising:

an outer receptacle having at least one opening for passage of the article; a metal container within said receptacle arranged to receive that selected portion of said article;

an inner electrode, within said container, spaced from said selected portion and electrically insulated from said receptacle, container and article; and

cathode means for applying one direct current potential to said receptacle, container and article and anode means for applying another potential to said electrode to produce a glow discharge between said electrode and said selected portion.

4,221,973

LINEAR ARRAY SIGNAL PROCESSING CIRCUITRY FOR LOCATING THE MIDPOINT OF A SOURCE OF LIGHT

John C. Nosler, 2587 Floral Hill Dr., Eugene, Oreg. 97403

Filed Dec. 26, 1978, Ser. No. 972,804

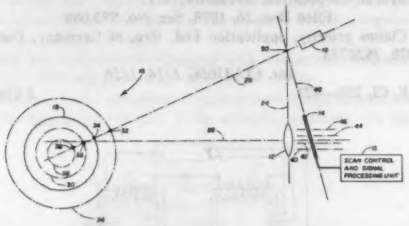
Int. Cl.[2] G01N *21/30*

U.S. Cl. 250—560 **5 Claims**

1. Processing circuitry for locating the geometric mid-point of an illuminated stretch of a linear photodetector array, where the array is scanned in a scanning cycle to provide, from such illumination, a signal taking the form of plural, time-adjacent, discreet DC voltage levels, said circuitry, in operative condition with respect to such an array, comprising

means operatively connected to said array for filtering such a signal to produce a related DC analogue pulse lacking discreet voltage levels,

means operatively connected to said filtering means for producing a square-wave pulse having a duration directly related to the time that the level of such an analogue pulse exceeds a predetermined voltage level, and



means operatively connected to said square-wave pulse-producing means for determining the time mid-point thereof.

4,221,974

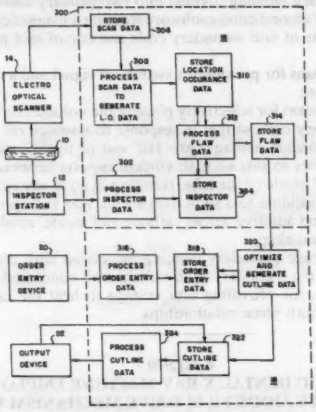
LUMBER INSPECTION AND OPTIMIZATION SYSTEM

Paul A. Mueller, Detroit; John R. Hartz, Southfield; Elaine D. Pawlowski, Wixom, and M. David Freedman, Southfield, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 933,393, Aug. 14, 1978, which is a division of Ser. No. 818,252, Jul. 22, 1977, Pat. No. 4,149,089, which is a continuation of Ser. No. 638,116, Dec. 5, 1975, abandoned. This application Feb. 2, 1979, Ser. No. 8,891

Int. Cl.[2] G01N *21/32*

U.S. Cl. 250—563 **37 Claims**



1. In combination with an electro-optical scanner generating encoded scan data indicative of the size, shape, and locations of random flaws detected on the surfaces of a piece of raw material, a system for optimizing product selection and utilization of the raw material comprising:

flaw data processor means for processing said encoded scan data to generate a flaw data buffer storing edge location data indicative of the location of the edges of a rectangle formed about each flaw;

product order entry means for generating in response to inputs from an external source an order entry buffer storing order entry data indicative of the products desired to be taken from the raw material, said order entry data including a physical description and an assigned priority for each product stored in said order entry buffer;

segment buffer generator means for analyzing said edge location data stored in said flaw data buffer to generate a

segment buffer storing the end location of usable segments of material between the random flaws;

product selection means for selecting said products from the usable segments of material stored in said segment buffer, said means selecting said products in the order of their priority; and

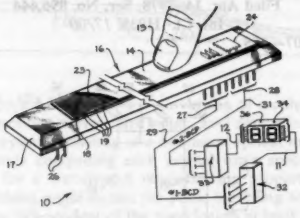
means for generating cut line data indicative of the beginning and end locations of each selected product.

4,221,975

TOUCH ACTIVATED CONTROLLER AND METHOD

Ferenc Ledniczki, Foster City; Richard J. Patak, San Jose, and Ronald G. Wayne, Milpitas, all of Calif., assignors to Touch Activated Switch Arrays, Inc., Santa Clara, Calif.

Filed Apr. 19, 1978, Ser. No. 897,686
Int. Cl.[2] G08C 9/02; H01H 35/00
U.S. Cl. 307—116 **9 Claims**



1. A touch activated controller for generating signals adapted to be coupled to operate apparatus in response thereto comprising a body of insulating material, a series of discrete capacitor portions carried in closely spaced relation by said insulation, said series including a plurality of groups of said portions disposed in tandem, the minimum displacement between the first and last said portion in each group being greater than the maximum fingerprint of the operator to inhibit simultaneous operation of all said portions of a given group, each of said portions serving to function as one plate of a capacitor when in the proximate presence of a person's finger or other body portion, a series of discrete sense amplifying circuit means respectively associated with related ones of said capacitor portions, said circuit means serving to provide a first digital output in response to the absence of a body portion at a discrete capacitor portion associated therewith and a second digital output in response to the presence of a body portion thereat, groups of said sense amplifying circuit means being operated to said second condition, means coupled to said series of sense amplifying circuit means serving to generate an associated sequence of control signals upon movement of the human finger or other body part across said series of discrete portions in one or another of two substantially opposite directions, said sequence of control signals representing increasing or decreasing information dependent upon the direction of movement of the finger.

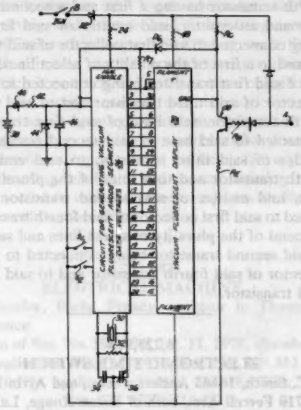
4,221,976

TRANSISTOR SLOPE REVERSING CIRCUIT FOR DIGITAL CLOCK DISPLAY BRIGHTNESS CONTROL

Kenneth E. Van Landingham, 3220 Auten Rd., Ortonville, Mich. 48462

Filed Apr. 7, 1978, Ser. No. 894,490
Int. Cl.[2] H03K 6/04
U.S. Cl. 307—230 **4 Claims**

1. A single transistor circuit for providing slope reversal of output voltage V_C including a relatively high current gain NPN transistor operated in the saturated and active regions and having a variable input voltage V_R, a collector resistor R_C, an emitter resistor R_E and a base resistor R_B; a DC source connected across said collector resistor and said emitter resistor and having a voltage magnitude V_B; said input voltage V_R connected across said base resistor and said emitter resistor; said output voltage taken across the collector and the emitter



resistor of said transistor; such slope reversal occurring at a magnitude V_{RR} of said input voltage; such that

$$V_R > V_{RR} \text{ and } V_C = \left(\frac{V_B R_E + V_R R_C - V_{BEON} R_C}{R_C R_B + R_E R_B + R_E R_C} \right) R_E$$

in the saturated region of said transistor; and

$$V_{BEON} \leqq V_R < V_{RR} \text{ and } V_C = V_B + (V_{BEON} - V_R) \left(\frac{R_C}{R_E} \right)$$

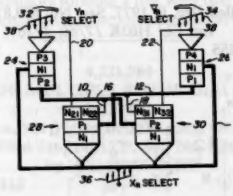
in the active region of said transistor; wherein the quantity V_{BEON} represents the base emitter voltage of said transistor in its "on" condition and wherein a data display filament voltage is connected across the collector and the emitter resistor R_E of said transistor.

4,221,977

STATIC I^2L RAM

Ward D. Parkinson, Dallas, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1978, Ser. No. 968,051
Int. Cl.[3] G11C 11/40; H01L 27/04
U.S. Cl. 307—238 **2 Claims**



1. A plurality of I^2L semiconductor memory cell circuits on a chip for selection by a plurality of select lines, each of said plurality of memory cells comprising in combination;

a first transistor of a first semiconductor type said first transistor having an emitter, a base and a collector;

a second transistor of said first semiconductor type said second transistor having an emitter, a base and a collector;

a third transistor of a second semiconductor type, said third

transistor having a first and a second collector, a base and an emitter;

a fourth transistor of said second semiconductor type; said fourth transistor having a first and a second collector, a base and an emitter, said emitter of said first transistor being connected to said first collector of said third transistor and to a first of the pluality of select lines, said collector of said first transistor being connected to said second collector of said third transistor and to said base of said fourth transistor, said base of said first transistor being connected to said base of said second transistor, to said emitter of said third transistor, to said emitter of said fourth transistor and to a third of the plurality of select lines, said emitter of said second transistor being connected to said first collector of said fourth transistor and to a second of the plurality of select lines and said collector of said second transistor being connected to said second collector of said fourth transistor and to said base of said third transistor.

4,221,978

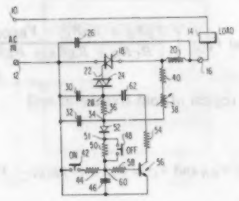
ELECTRONIC TIME SWITCH

Charles C. Smith, 16442 Antietam Ave., and Alvin P. Rougeau, Jr., 15710 Ferrell Ave., both of Baton Rouge, La. 70816

Filed Jul. 24, 1978, Ser. No. 927,090

Int. Cl.[2] H03K *17/60, 1/12*

U.S. Cl. 307—252 B **10 Claims**



1. An electronic switch operated by a first user command and a second user command for use with an A.C. power system and of the type having a Triac with two main leads and a gate lead, the two main leads being connected in series with the load to be switched, the improvement comprising means connected to said gate lead and to said A.C. power system for providing a trigger pulse for each half-cycle of said A.C. power system only during a predetermined time period after receipt of said first user command.

4,221,979

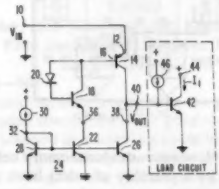
NON-INVERTING BUFFER CIRCUITS

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1977, Ser. No. 858,810

Int. Cl.[2] H03K *17/60, 3/26*

U.S. Cl. 307—255 **8 Claims**



1. A buffer circuit comprising, in combination:

an input transistor having emitter, base and collector electrodes, and an emitter-to-base junction;

a circuit input terminal coupled to said emitter electode;

a first current source;

means, responsive to current flow through said means, for establishing a voltage at a particular level across said means, said means and said first current source connected in series between said base electrode and a point of reference potential;

a second current source connected between said collector electrode and said point of reference potential; and

a circuit output terminal at said collector electrode.

4,221,980

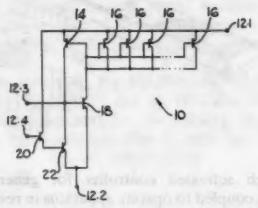
ELECTRICAL SWITCHING MEANS

Wynand J. Louw, Randburg; Douw G. van der Merwe, Pretoria, and Carel J. F. Coetzee, Roodepoort, all of South Africa, assignors to South African Inventions Development Corporation, Pretoria, South Africa

Filed Apr. 14, 1978, Ser. No. 896,444

Int. Cl.[2] H03K *17/00*

U.S. Cl. 307—255 **16 Claims**



1. A switchable, latched, regenerative electrical power switch having a first and a second power terminal and a control terminal, which includes

a main switching element that is switchable and which has a first and a second power terminal and a control terminal;

a latching element that is switchable and which has a first and a second power terminal and a control terminal, the control terminal of the latching element being connected with the first power terminal of the main element and the control terminal of the main element being connected with the first power terminal of the latching element; and

a number of auxiliary current enhancing elements each having a first and a second power terminal and which are connected in parallel with the latching element, the first terminal of each auxiliary element being connected with the second power terminal of the latching element and the second terminal of each auxiliary element being connected with the control terminal of the latching element, each auxiliary element also having a control terminal which is also connected with the control terminal of the latching element, the auxiliary elements being such that when there is, in use, a current flow therethrough the latching element is maintained in a conductive mode;

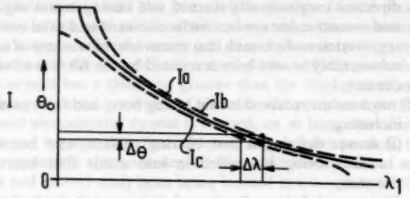
with the junction between the first terminals of the auxiliary elements and the second power terminal of the latching element constituting the first power terminal of the switch, the junction between the control terminal of the main element and the first power terminal of the latching element constituting the control terminal of the switch, and the second power terminal of the main element constituting the second power terminal of the switch, the latching element and auxiliary elements being similar, the main element being such that the current flow between its power terminals is substantially a constant multiple of the current flow through its control terminal, said number of auxiliary elements being the same as the integer value closest to the constant multiple.

4,221,981

DEVICE FOR FREQUENCY CONVERSION OF COHERENT LIGHT

Ulrich Deserno, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,796
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758876
Int. Cl.² H03F 7/00
U.S. Cl. 307—425 2 Claims



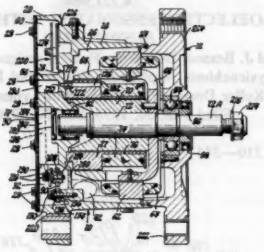
1. In a device for frequency conversion of a coherent light from a prescribed wavelength range, said device including at least one crystal consisting of a nonlinear optical material the improvements comprising each crystal for a specific wavelength λ_u for a wavelength range having properties of the phase matching angle θ_0 and the phase matching temperature of T_0 being independent of the wavelength at least in the first approximation.

4,221,982

LIQUID COOLED RECTIFIED-ALTERNATING CURRENT GENERATOR

Louis J. Raver, Anderson, and Gene D. Bricker, Wilkinson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 31, 1978, Ser. No. 929,657
Int. Cl.² H02K 9/00
U.S. Cl. 310—59 4 Claims



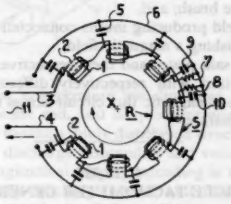
1. A liquid cooled rectified-alternating current generator comprising, housing means defining a generator compartment, a stator winding disposed within said generator compartment, means including rotor means rotatable with respect to said stator winding for causing an alternating current to be generated in said stator winding when said rotor means is rotated, housing means defining a rectifier compartment disposed adjacent said generator compartment and separated therefrom by a laterally extending wall common to said compartments, means defining an inlet passage adapted to be connected to a source of pressurized liquid cooling medium for supplying liquid cooling medium to said rectifier compartment, first passage means extending through said laterally extending wall for connecting said rectifier compartment and said generator compartment, rectifier means disposed within said rectifier compartment comprising at least one heat sink means supporting a rectifier means, said rectifier means electrically connected to said stator winding, said heat sink means being spaced from said first passage means, means defining second laterally extending passage means having an inlet located adjacent said heat sink means connecting said inlet to said first passage means, the length of said second passage means being such that liquid cooling medium in said rectifier compartment is maintained at a level at which it contacts at least a portion of said heat sink means when said rectifier compartment is positioned such that the inlet of said second passage means can operate as a drain for liquid cooling medium contained in said rectifier compartment when said rectifier compartment is not being fed with pressurized liquid cooling medium, and means defining an outlet passage connected to said generator compartment for exhausting cooling medium therefrom.

4,221,983

ELECTRICAL MACHINE

Georges Mourier, Paris, France, assignor to Thomson CSF, Paris, France

Continuation of Ser. No. 595,096, Jul. 11, 1975, abandoned. This application May 12, 1978, Ser. No. 905,352
Claims priority, application France, Jul. 16, 1974, 74 24667
Int. Cl.² H02K 11/00
U.S. Cl. 310—72 22 Claims



1. An electrical machine comprising a fixed part, or stator, and a rotor, both equipped with poles, said rotor displacing in relation to said stator in such a fashion that its poles pass in front of those of the stator, said stator and said rotor comprising electrical elements in each of their poles, through which the rotor poles are electromagnetically coupled with the stator poles at the instant at which they pass in front of each of same, said rotor comprising both inductors and elements which accumulate electricl charges, forming oscillatory circuits which are not coupled with each other, i.e., not in a transmission line, said circuits being associated with each of said rotor poles, at the rate of one circuit per pole, said oscillatory circuits being localized in part at least within said rotor poles, said stator comprising reactive elements, localized in part at least within said stator poles, and resistive elements connected between two conductors forming a line with two input terminals at one of its ends and two output terminals at the other end.

4,221,984

STATOR FOR MULTIPLE ROTOR D. C. MAGNETIC MOTOR

Elmer B. Mason, 901 Vickie Dr., Del City, Okla. 73115

Filed Jan. 10, 1979, Ser. No. 2,262
Int. Cl.² H02K 16/00
U.S. Cl. 310—112 9 Claims

1. A motor assembly, comprising:

magnetic motor framework means including a pair of spaced-apart plates each having at least one transverse aperture coaxially aligned with the aperture in the opposite plate;

an armature adjacent each plate in axial alignment with the aperture,

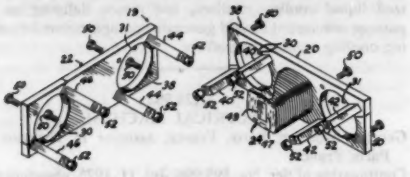
said armature being characterized by a winding having a plurality of axially extending segments and a commuta-

tor having a like plurality of segments and including a pair of commutator brushes each transversely spanning a plurality of commutator segments;

housing means including bearings encompassing said framework for journalling said armature,

said framework plates each having at least one rigidly connected pole piece adjacent its aperture normal to the plane of the plate and projecting parallel with the armature axis and in opposition with respect to the pole piece on the opposite plate,

each said pole piece being characterized by a transverse surface facing the periphery of said armature,



the transverse dimension of said transverse surface being no greater than the transverse dimension of a plurality of armature winding segments equal in number to the number of cummutator segments spanned by the respective brush; and,

magnetic field producing means connected with said plates for establishing a magnetic field,

whereby said plates and their respective pole pieces are magnetized with respectively different polarities to provide a magnetic flux circuit across the periphery of said armature.

4,221,985

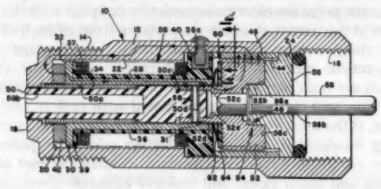
VEHICLE TACHOMETER GENERATOR

Gerald L. Larson, and Roger F. Kuether, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 713,030, Aug. 9, 1976, abandoned. This application Apr. 14, 1978, Ser. No. 896,544

Int. Cl.[2] H02K *17/42*

U.S. Cl. 310—171 **13 Claims**



1. A dynamoelectric machine for generating an alternating electric signal having the frequency thereof proportional to the shaft speed of the machine comprising:

(a) casing means including an outer stator member defining interiorly thereof a bore adapted for receiving rotor means therein. said member having, with respect to said bore, an axial registration surface and a first magnetic stator pole of plural segments associated therewith;

(b) a stator subassembly disposed within said bore and having,

(i) inner stator means including a tubular inner stator member formed of ferromagnetic material and having portions thereof defining a second magnetic stator pole having a second contact surface adapted for registration thereagainst in a direction longitudinally of said bore;

(ii) a coil of electrically conductive material, said coil having said inner stator member received therewithin,

(iii) means electrically insulating said coil from said stator inner member, said coil and said insulating means cooperate to prevent relative movement of one with respect to the other; and,

(iv) first bearing means disposed within said inner stator member;

(c) means preventing relative rotation of said subassembly with respect to said casing about the axis of said bore, yet permitting movement of said subassembly transversely with respect to said bore;

(d) magnet means disposed between said axial registration surface of said casing means and said second contact surface;

(e) means resiliently biasing said stator subassembly in a direction longitudinally thereof, said biasing means urging said second stator contact surface toward said axial casing registration surface such that transverse movement of said subassembly in said bore is resisted by the friction of said contact;

(f) rotor means received in said casing bore, said rotor means including,

(i) means defining a first bearing surface, said bearing surface being journalled in said stator first bearing means,

(ii) means defining a first magnetic rotor pole with plural segments, said segments being disposed adjacent, and closely spaced from, said segments of said first magnetic stator pole for rotation with respect thereto;

(iii) means defining a second magnetic rotor pole axially spaced from said first pole, said second magnetic rotor pole being disposed within said stator inner member and closely spaced from said second magnetic stator pole for defining a continuous substantially constant flux air gap and for rotation with respect thereto,

(iv) ferromagnetic means defining a continuous path for flow of magnetic flux between said first and second magnetic rotor poles;

(v) means defining a second rotor bearing surface spaced axially from said first rotor bearing surface; and,

(g) second bearing means received in said casing means and journalled on said second rotor bearing surface and including means retaining said rotor means axially in said bore.

4,221,986

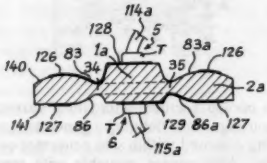
PIEZOELECTRIC RESONATOR WITH IMPROVED SUSPENSION

Raymond J. Besson, Besancon, France, assignor to Laboratoires de Physicochimie Appliquees ISSEC and KDP Societe anonyme Keller Dorian Papiers, both of Lyons, France

Filed Jun. 30, 1978, Ser. No. 920,675

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—344 **9 Claims**



1. A piezoelectric resonator comprising a sealed box having substantially less than atmospheric pressure therein; a piezoelectric crystal disposed within said box, said piezoelectric crystal having first and second main opposite faces, a first metal electrode deposited on the first main face of said piezoelectric crystal and a second metal electrode deposited on the second main and opposite face of said piezoelectric crystal; a first conductor connected to the first electrode and extending outside said box; a second conductor connected to the second electrode and extending outside said box; and means for main-

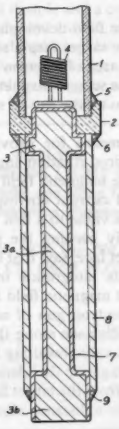
taining said piezoelectric crystal within said box, said piezoelectric crystal comprising a central portion and a peripheral portion forming a ring spaced about said central portion and a tapered intermediate portion interconnecting said central portion to said peripheral portion, said tapered intermediate portion having a reduced thickness compared with the thickness of said central and peripheral portions over at least a part thereof between said central and peripheral portions, said first and second electrodes being deposited on said peripheral portion such that said peripheral portion constitutes the active part of said piezoelectric crystal, whilst said maintaining means are coupled to localized zones of said central portion to immobilize the latter in said box, the intermediate portion of said piezoelectric crystal and said immobilized central portion constituting a suspension for the active part of said piezoelectric crystal, and wherein the immobilized central portion of said piezoelectric crystal has a thickness greater than the thickness of said active peripheral portion; and wherein said peripheral portion of said piezoelectric cyrstal is formed, on at least one of said first and second main faces thereof, as a convex portion, the corresponding electrode deposited on said at least one of said first and second main faces being located in a maximum thickness zone of said peripheral portion.

4,221,987

HIGH-PRESSURE DISCHARGE TUBE OPERABLE IN THE OPEN AIR WITHOUT OUTER PROTECTIVE ENVELOPE

Bela Kerekes, Budapest, Hungary, assignor to Egyesült Izzólámpa és Villamossági Részvénytársaság, Budapest, Hungary

Continuation-in-part of Ser. No. 614,475, Sep. 18, 1975, abandoned. This application Sep. 21, 1978, Ser. No. 944,722
Claims priority, application Hungary, Dec. 20, 1974, EE 2299
Int. Cl.³ H01J *61/073, 61/30, 61/52*
U.S. Cl. 313—42 **4 Claims**



1. A high pressure air operable electric alkali vapor discharge tube comprising:

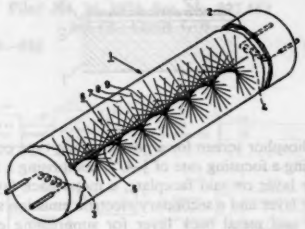
a light cylindrical ceramic or crystal envelope having therein an electrode at each end; a ceramic adapter tube at each end of said envelope, said adapter tube having a length of at least 35 mm. and being evacuated or filled with an inert gas; each of said adapter tubes being attached to a collar for heat insulation which is sealed between said envelope and said adapter; a common closure member at each end of said envelope, in vacuum tight contact with said collar and said adapter tube and in electrical contact with said electrode; the opposite ends of each closure member opposite and remote from said envelope being in electrical connection with an outside electrical source.

4,221,988

LOW PRESSURE GAS DISCHARGE LAMP HAVING FIBERS EVENLY DISTRIBUTED BETWEEN THE ELECTRODES

Jan Hasker; Petrus R. van Ijzendoorn, and Hendrik Roelofs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 877,162, Feb. 13, 1918, Pat. No. 4,143,447.
This application Oct. 31, 1978, Ser. No. 956,309
Claims priority, application Netherlands, Jan. 23, 1977, 7701910
Int. Cl.² H01J *61/04*
U.S. Cl. 313—203 **8 Claims**



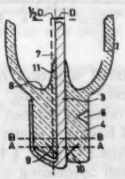
1. An elongated low pressure gas discharge lamp having electrodes at opposite end, said lamp comprising a discharge vessel and a body having a thinly distributed structure which is permeable to the discharge disposed in said vessel, said body consisting of a longitudinal support extending in the longitudinal direction of the discharge vessel, and fibers connected thereto which are evenly distributed over the space within the discharge vessel and which extend to the wall of the discharge vessel in a direction which is substantially transverse to said support.

4,221,989

ELECTRIC LAMP SEAL CONSTRUCTION

Johannes M. J. Van Lieshout, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,862
Claims priority, application Netherlands, Apr. 20, 1978, 7804198
Int. Cl.² H01J *5/50*
U.S. Cl. 313—331 **1 Claim**



1. An electric lamp having an envelope at least one portion of which is generally tubular, said portion being sealed in a vacuum-tight manner by a pinch seal around at least one molybdenum current supply wire, having a diameter D, which extends from outside the lamp envelope to an electric element accommodated in the lamp envelope, which portion of the lamp envelope consists of an alkali-alumino-borosilicate glass having a coefficient of thermal expansion between 31 and 37×10^{-7}°C.$^{-1}$ at 0°–300° C., characterized in that the glass of the pinch seal of the generally tubular of the lamp envelope is

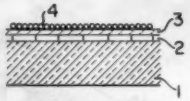
directly fused to the current supply wire and extends inwardly of the lamp envelope circumferentially around the current supply wire in a layer which is thinner than D/2 over a length of at least D/2.

4,221,990

PHOSPHOR SCREEN FOR POST-FOCUSING TYPE COLOR PICTURE TUBE

Eiichi Yamazaki, Ichihara; Hiromi Kanai, Mobara; Masao Taniguchi, Mobara, and Shigemi Hirasawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 12, 1974, Ser. No. 441,793
Claims priority, application Japan, Feb. 14, 1973, 48-17461
Int. Cl.[2] H01J *29/18, 29/28*
U.S. Cl. 313—466 **9 Claims**



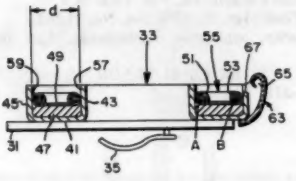
1. A phosphor screen for a post-focusing type color picture tube having a focusing rate of ⅓–4/5, comprising a faceplate, a phosphor layer on said faceplate, a metal back layer on said phosphor layer and a secondary electron emission suppressing layer on said metal back layer for suppressing emission of secondary electrons from said phosphor screen, in which the thickness of said metal back layer is about 4500–7000 A and the density of said secondary electron emission suppressing layer is about 0.03–0.15 mg/cm^2.

4,221,991

SEALED EFFUSIVE STRUCTURE FOR USE IN A CATHODE RAY TUBE

Kenneth Speigel, Seneca Falls, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,636
Int. Cl.[3] H01J *19/70*
U.S. Cl. 313—481 **10 Claims**



1. An effusive material structure for internal orientation within a cathode ray tube comprising:

a metallic annular container formed as an open continuous U-shaped channel having a center-line therearound, said channel being formed to have a bottom portion wherefrom inner and outer upstanding walls extend in spatially-related concentric formations;

an effusive material uniformly disposed within the confines of said channel, said inner and outer upstanding walls being of sufficient height to each have an annular upper portion extending above said effusive material uniformly disposed within the confines of said channel;

an annular metallic covering material fitted into said channel and secured therein in a manner to form a substantially contiguous seal over said effusive material and having a melting point within the range of about 500°–700° C.;

receptacle means integral to said metallic annular container and formed to receive and retain said covering material upon having reached said melting point; and

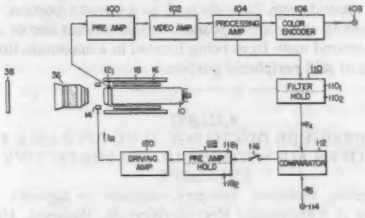
attachment means joined to said metallic annular container to provide affixation thereof to an internal structure within said cathode ray tube.

4,221,992

SCANNING AREA ROTATION DEVICE FOR AN IMAGE PICKUP TUBE

Joji Ueda, Kishiwada; Hiroshi Hisamatsu, Kyoto, and Yoshio Takamura, Yokohama, all of Japan, assignors to Asahi Broadcasting Corporation, Osaka and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Aug. 18, 1978, Ser. No. 935,496
Claims priority, application Japan, Oct. 24, 1977, 52/127458
Int. Cl.[2] H01J *31/26*
U.S. Cl. 315—10 **9 Claims**



1. A scanning-area rotation device for an image pick-up tube, comprising:

a photoconductive type image pick-up tube;

focusing magnetic field generating means for forming within said image pick-up tube a first magnetic field to focus electron beams to be scanned on a target face of said image pick-up tube;

divergence magnetic field developing means for forming in the vicinity of the target face a second magnetic field to rotate a scanning area of electron beams to be scanned on the target face, the second magnetic field being symmetrical with respect to a tube axis of said image pick-up tube; and

current providing means for providing a current corresponding to a desired rotation angle of the scanning area to said divergence magnetic field developing means, the magnitude of said current corresponding to a ratio of a second integration value to a first integration value capable of substantially keeping the in-focusing of electron beams on the target face, said first integration value resulting from a definite integration of a first magnetic flux density of the first magnetic field formed from the target face toward an electron gun of said image pick-up tube with respect to a distance along the tube axis, while said second integration value resulting from a definite integration of a second magnetic flux density of the second magnetic field formed from the target face toward the electron gun with respect to a distance along the tube axis

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4,221,993

DISCHARGE LAMP HAVING MECHANICAL DISCONNECT GUARD AGAINST JACKET FAILURE

Robert G. Phillipp, Parma; Wayne R. Hellman, Twinsburg; Wayne C. Matz, Richmond Heights, and Walter Bacharowski, Jr., Cleveland, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1976, Ser. No. 669,192
Int. Cl.[2] H01J *7/44, 17/34, 23/16;* **H01K** *1/62*
U.S. Cl. 315—73 **3 Claims**

1. A jacketed electric lamp comprising:

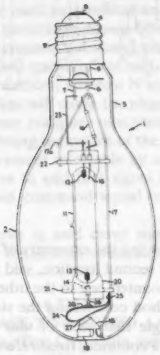
a sealed vitreous outer envelope having a neck end to which

a base is attached and a dome end including an anchoring dimple;

current inleads connected to said base and sealed into said envelope through the neck end;

an inner arc tube of material which transmits ultraviolet radiation within said outer envelope, said arc tube having electrodes and inleads thereto sealed into its ends and containing an ionizable medium productive of radiation including ultraviolet which is normally intercepted at the outer envelope;

a mount frame supporting said inner arc tube within said



outer envelope and comprising a side-rod extending from one of the current inleads to the anchoring dimple and means attaching the arc tube to the side rod;

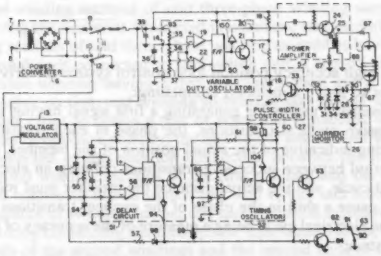
and means connecting the electrode inleads of the arc tube to said current inleads comprising said side-rod and a springy conductor formed into a loop attached thereto and compressed between said dimple and a contact attached to the arc tube inlead close to said dimple, one branch of the loop pressing against said dimple and the other branch pressing against said contact, said springy conductor providing circuit continuity only so long as said outer envelope is intact and maintains it compressed.

4,221,994

PHOTO CURING LIGHT SOURCE

Joshua Friedman, Ridgefield, and Brian Dell, Newtown, both of Conn., assignors to Demetron Research Corporation, Danbury, Conn.

Filed Nov. 9, 1978, Ser. No. 959,313
Int. Cl.[2] H05B *41/39*
U.S. Cl. 315—224 **8 Claims**



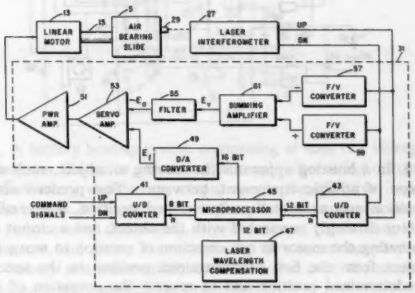
1. An instrument for delivering radiant energy to a target comprising a fluorescent lamp; power means coupled to said lamp for generating energizing current pulses, including a converter to convert AC line power to rectified DC; a pulse generating oscillator coupled to said converters, including a long time constant resistor-capacitor network for controlling the pulse width of said oscillator; means for detecting the average value of said energizing current connected to said lamp; and an amplifier connected between the output of said detecting means and said network responding directly to the magnitude of said energizing current as detected by said detecting means to adjust directly and continuously the charging rate of said network.

4,221,995

LINEAR MOTOR DRIVE SYSTEM FOR CONTINUOUS-PATH CLOSED-LOOP POSITION CONTROL OF AN OBJECT

William E. Barkman, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 24, 1978, Ser. No. 927,442
Int. Cl.[3] G05B *5/01*
U.S. Cl. 318—616 **5 Claims**



1. A linear motor drive system for continuous path, closed-loop position control of an object, comprising:

a base member;

a linear drive motor mounted on said base member and having an input for receiving a motion control signal whose amplitude controls the motor moving member force and the polarity controls the direction of applied force;

an object to be positioned along the axial path of movement of said motor coupled to said moving member of said motor;

an air-bearing slideway for supporting said object on said base member and allowing free movement of said object along said axial path;

means for generating position command pulses indicative of the distance and velocity said object is to be moved along said axial path;

an interferometer feedback system operatively coupled to said object for sensing the movement of said object and generating feedback pulse indicative of the distance and velocity of movement of said object;

computing means for comparing said position command pulses and said interferometer feedback pulses and calculating an analog following error signal indicative of the deviation of said object from the commanded position along said path; and

a servo control means for generating and applying said motion control signal to said motor including a frequency-to-voltage converter means responsive to the output of said interferometer for generating an analog signal having an amplitude proportional to the velocity of movement of said object and a series RC network connected in series with the output of said frequency-to-voltage converter means for generating a filtered velocity signal having an amplitude proportional to the approximate acceleration of

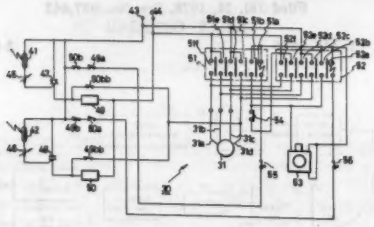
said object and means for comparing said filtered velocity signal with said following error signal and generating said motion control signal in response to the deviation of said object from the commanded continuous path position, so that said object is accurately positioned along the commanded axial path of movement of said object.

4,221,996

HOISTING APPARATUS

Motoi Shimizu; Masaaki Miyazaki, both of Kamagaya, and Seiji Oh-Higashi, Funabashi, all of Japan, assignors to Senoh Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,850
Int. Cl.[2] H02P *1/22, 1/40*
U.S. Cl. 318—287 **9 Claims**



1. In a hoisting apparatus for moving an object, such as a piece of athletic equipment, between a first predetermined position and a second predetermined position, a reversible motor drivingly connected with the object, and a circuit for operating the motor in one direction of rotation to move the object from the first predetermined position to the second predetermined position and to reverse the operation of the motor to move the object from the second predetermined position to the first position, a source of power, first coupling means connecting the motor to the source of power of rotation of the motor in the one direction for movement of the object from the first position to the second position, and second coupling means connecting the motor to the source of power for reversing the rotation of the motor for movement of the object from the second position to the first position, the improvement comprising

a first photosensitive energy responsive means interconnected between said motor and said first coupling means for electrically coupling said motor with said first coupling means in response to energization of said first energy responsive means by continuous light energy impinging thereon;

a second photosensitive energy responsive means independent of said first energy responsive means, said second energy responsive means being interconnected between said motor and said second coupling means for electrically coupling said motor with said second coupling means in response to the energization of said second energy responsive means by continuous light energy impinging thereon;

time delay means interconnected with said first and said second energy responsive means and said first and said second coupling means to delay the connection between said first coupling means and said motor and said second coupling means and said motor to assure connection of said motor with said first or said second coupling means solely in response to a sustained energization of said first or said second photosensitive energy responsive means; and,

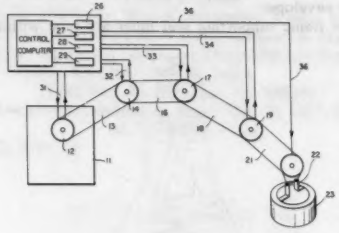
means responsive to the simultaneous energization of both said first photosensitive energy responsive means and said second photosensitive energy responsive means to isolate said motor from the source of power to render the hoisting apparatus inoperative.

4,221,997

ARTICULATED ROBOT ARM AND METHOD OF MOVING SAME

John P. W. Flemming, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,729
Int. Cl.[2] G05B *19/22*
U.S. Cl. 318—574 **7 Claims**



1. A method of moving the extremity of an articulated, robot arm from a first to a second location, said arm including n arm sections pivotally mounted one to the other thereby defining n arm joints, said method comprising the steps of:

measuring the angle that each of said arm sections makes with respect to a common, fixed reference plane; and then

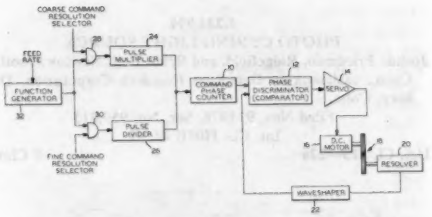
rotating m of said joints to move said extremity towards said second location, $1 \leqq m \leqq n$, the rotation of each joint being made proportional to the desired change in the corresponding angle.

4,221,998

HIGH ACCURACY CONTROL SYSTEM

Thomas P. Haught, and Dale F. Johnson, both of Waynesboro, Va., assignors to General Electric Company, New York, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,106
Int. Cl.[2] G05B *1/06*
U.S. Cl. 318—661 **11 Claims**



1. A high accuracy position loop control system for driving a motor to move a member, comprising:

(a) feedback means for generating a first signal having successive cyclical transitions, the phase of each transition being indicative of the actual position of the member, the period between successive transitions defining an electrical cycle, and the actual distance the member must move to cause a shift in the phase of the cyclical transitions by one electrical cycle being a measure of the accuracy of the system;

(b) means responsive to movement of the member for maximizing the accuracy of said feedback means by dividing by a factor of X the actual distance the member must move to cause a shift in the phase of the cyclical transitions by one electrical cycle;

(c) means for generating command pulses, each command

pulse being indicative of an increment of commanded movement;

(d) means for generating a command signal having cyclical transitions, each cyclical transition being indicative of the desired commanded movement of the member, the period between successive cyclical transitions defining the same electrical cycle as that produced by said first signal from said feedback means;

(e) means selectable by an operator for multiplying each incremental command pulse by a factor of K to apply K number of pulses to said command signal generating means so as to shift the phase of said command signal by K increments for each incremental command pulse, said command signal generating means being thereby responsive to each incremental command pulse for shifting the phase of the cyclical transitions of said command signal by a predetermined amount, wherein N number of incremental command pulses will cause the phase of said command signal to shift one complete electrical cycle, and each command pulse being indicative of the smallest amount of incremental movement selectable by an operator;

(f) means responsive to said first signal from said feedback means and to said command signal to generate an error signal; and

(g) means responsive to said error signal for driving the member toward the desired commanded position.

4,221,999

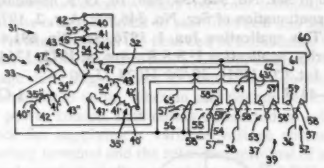
THREE-PHASE TWO SPEED A.C. MOTOR

Elmer J. Gausman, Jr., Tipp City, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Mar. 29, 1978, Ser. No. 891,207

Int. Cl.[2] H02P 7/48

U.S. Cl. 318—704 **6 Claims**



1. A three-phase motor having a plurality of preselected operating speeds, said motor having three-phase winding assemblies displaced by one-hundred and twenty degrees and a switch unit connecting three-phase input means to said winding assemblies, each of said three-phase winding assemblies comprising a first multiple section winding having a first winding section connected in series with a second winding section, said winding sections being offset to define a pair of poles, said first winding sections of said three-phase winding assemblies having the first ends connected in common, said second winding sections of said three-phase winding assemblies having the second ends connected to said switch unit, a second multiple section winding having a first winding section and a second winding section, said winding sections of said second winding being offset to define a pair of poles and connected to form poles of opposite polarity; the first end of said second winding connected to the common connection between the first and second winding sections of the first winding and the second end connected to said switch unit, said switch unit including a plurality of switches having one speed position selectively and directly connecting the three-phase input means to the second ends of the second windings and the second ends of the first windings to each other to provide a substantially unmodulated equal magnitude poles of a first predetermined number and a second speed position connecting said second ends of said first winding directly to the three-phase input means and open circuiting the connection to the second windings to provide a substantially unmodulated equal magnitude poles of a second predetermined number different than said first predetermined number.

4,222,000

BATTERY HEATING SYSTEM

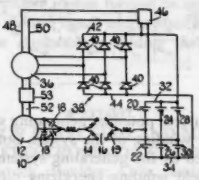
Cyril Silvertown, London, and Walter Sinclair, Westoning, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 6, 1978, Ser. No. 922,282

Claims priority, application United Kingdom, Jul. 15, 1977, 29894/77; Dec. 31, 1977, 54394/77

Int. Cl.[2] H02J 7/14; H05B 9/00

U.S. Cl. 320—35 **8 Claims**



1. A battery heating system comprising at least one storage battery, an alternator connected to supply alternating current to the battery and having output means the effective impedance of which is significantly higher that the maximum internal resistance of the battery, a prime mover for driving the alternator, and means for maintaining the current supplied to the battery at a substantially constant value over the normal working speed range of the prime mover.

4,222,001

SELF-EXCITED DYNAMO-ELECTRIC MACHINES WITH IMPROVED START-UP CHARACTERISTICS

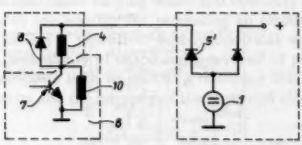
Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,920

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806597

Int. Cl.[2] H02P 9/30

U.S. Cl. 322—60 **4 Claims**



1. In a self-excited generator having an exciter winding and regulator circuit means connected in series with said exciter winding for regulating the flow of current therethrough, apparatus for improving the self-excitation of said generator, said apparatus comprising

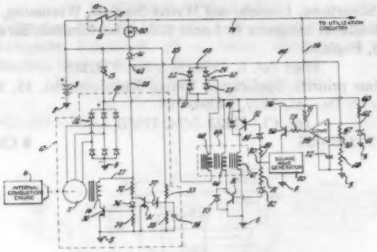
positive temperature coefficient resistor means (10) having a resistance increasing substantially with increasing temperatures connected in parallel with said regulator circuit means, whereby said current flowing through said exciter winding at start-up of said generator is substantially increased.

4,222,002

POTENTIAL GENERATING SYSTEM INCLUDING AN AUXILIARY DIRECT CURRENT POTENTIAL PRODUCING ARRANGEMENT

Arthur R. Sundeen, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1978, Ser. No. 951,498
Int. Cl.[2] H02P *9/14*
U.S. Cl. 322—86 **5 Claims**



1. In a direct current potential generating system of the type wherein the field winding of the system potential generating device is energized by the generating system output potential connected in a field winding energizing circuit, an auxiliary direct current potential producing system that is operative to maintain substantially full energizing current flow through the system potential generating device field winding when the system output potential decreases in magnitude to a reduced level as a result of overload conditions comprising:

means for producing an auxiliary direct current potential of a selected level and for connecting said auxiliary potential in said system potential generating device field winding energizing circuit in series aiding relationship with said generating system output potential; and

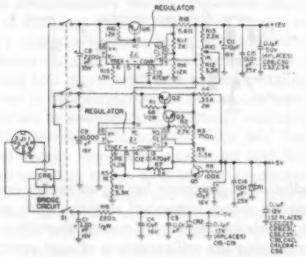
means responsive to the potential applied across said system potential generating device field winding for activating said means for producing said auxiliary direct current potential when the potential applied across said field winding decreases in magnitude to a preselected reduced level.

4,222,003

POWER SUPPLY WITH CURRENT LIMITING

Christopher Kline, Grand Prairie, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed Jul. 21, 1978, Ser. No. 926,956
Int. Cl.[2] G05F *1/58*
U.S. Cl. 323—9 **15 Claims**



1. A power supply circuit comprising;

means for receiving an input voltage,

means defining at least one voltage bus to which at least one load is connected,

pass transistor means having main electrodes intercoupling between the input receiving means and the voltage bus and having a control electrode,

regulator means comprising load current control means monitoring the voltage bus during a first load range, first control transistor means having an output coupling to the control electrode of the pass transistor means and responsive to a feedback signal from the load current during said first load range by controlling conduction of the pass *transistor means, and second control transistor means for controlling the first control transistor means commencing at the attainment of a predetermined maximum load current,*

first current limiting means responsive to load current in the bus during a second load range greater than the first load range for controlling the second control transistor means which in turn controls the first control transistor means to limit the load current to said predetermined maximum load current,

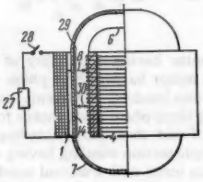
and [a] *second* current limiting [transistor] means *including current limiting transistor means* [coupled from the reference voltage to the voltage bus and] having an output electrode for operating the *second* control transistor means of the regulator means to decrease *load* current flow *during a third overload range greater than the first and second load ranges* [through the pass transistor means when the current limiting transistor means detects an increased current flow in the voltage bus].

4,222,004

INDUCTIVE TRANSFORMER-TYPE STORAGE DEVICE

Evgeny A. Abramian, Moscow, U.S.S.R., assignor to Osoboe Konstruktorskoe Bjuro Instituta Vysokikh Temperatur Akademii Nauk SSSR, Moscow, U.S.S.R.

Continuation of Ser. No. 548,734, Feb. 10, 1975, abandoned, which is a continuation of Ser. No. 346,909, Apr. 2, 1973, abandoned. This application Jun. 1, 1976, Ser. No. 691,437
Claims priority, application U.S.S.R., Apr. 4, 1972, 1764897
Int. Cl.[2] H01L *39/04*; H02J *15/00*
U.S. Cl. 323—44 F **1 Claim**



1. An inductive transformer-type storage device for generating voltages on the order of 1 MV and higher comprising a superconductive primary winding;

a d-c source for feeding said primary winding;

means connecting said primary winding to said d-c source for charging the storage device and storing the accumulated energy and means disconnecting said winding from said source for discharging the storage device;

a secondary winding secured coaxially inside said primary winding;

said secondary winding having a substantially higher number of turns than said primary winding;

a high-voltage electrode of said secondary winding;

a gap formed between said primary and secondary windings;

a hermetically sealed casing enclosing said secondary winding and said gap;

said primary winding being arranged outside said hermetically sealed casing;

a dielectric filing said casing and having dielectric strength of at least 50 kV/cm;

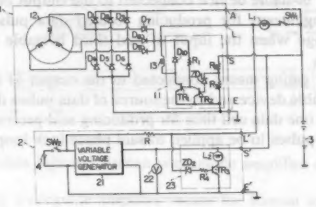
said gap being selected so as to ensure a breakdown strength in said dielectric and an interwinding coupling coefficient ranging from 0.2 to 0.8.

4,222,005

TESTING DEVICE FOR GENERATOR OUTPUT VOLTAGE REGULATORS

Shotaro Naito, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 16, 1978, Ser. No. 887,366
Claims priority, application Japan, Mar. 22, 1977, 52-30369
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—158 MG **9 Claims**



1. A testing device for a semiconductor voltage regulator incorporated in a generator assembly including an AC generator having a field coil and an armature coil, rectifier means for rectifying a voltage induced in the armature coil, and means coupled to the field coil to supply a field current to said field coil, said regulator having a voltage detecting terminal coupled to said rectifier means for detecting an output voltage of the generator assembly, and a reference terminal, wherein said regulator is also coupled to said field coil and adjusts the current flowing through the field coil in accordance with the level of said output voltage of said generator assembly sensed at said voltage detecting terminal to control said output voltage to a predetermined value, wherein said testing device comprises a DC power source, first means connected to said DC power source for supplying a variable voltage across the voltage detecting terminal and the reference terminal of said regulator, second means including a resistor and said DC power source connected in series between said field coil and said reference terminal, means for detecting the varying output voltage of said first means, and means for detecting a change in voltage between a junction between said field coil and said resistor and said reference terminal thereby enabling said testing device to test the regulator while said regulator is coupled to said field coil and said rectifier means.

4,222,006

THERMAL COMPOSITION CIRCUIT FOR ELECTROCHEMICAL DETECTORS

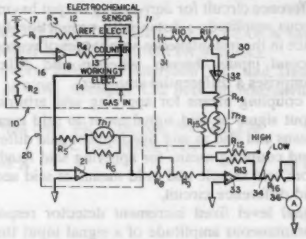
Alan A. Schneider, Reisterstown, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Dec. 18, 1978, Ser. No. 970,334
Int. Cl.[3] G01N *27/42*
U.S. Cl. 324—441 **5 Claims**

1. Means for compensating for variations resulting from temperature in span and zero signals of electrochemical detectors comprising:

a. a first compensating circuit electrically connected to the output of said detector and including a first thermistor and a first operational amplifier the output of which provides a first signal that compensates for all variations in span and at least a portion of any variation in the zero signal;

b. a second compensating circuit comprising a second thermistor, a divider network including a power source for adjusting the zero signal and providing an input signal to said second thermistor, said second circuit providing a second thermally compensating signal based upon variations in the zero signal; and



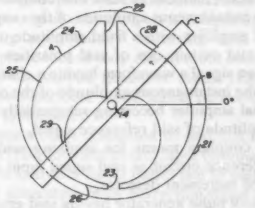
c. a second amplifier means having an input consisting of said first and second signal and at least one resistive feedback loop for algebraically adding the first and second signals.

4,222,007

APPARATUS FOR DETECTING AND MEASURING AN ELECTROSTATIC FIELD

Bluford M. Comstock, Boulder, Colo., assignor to Scientific Enterprises, Inc., Broomfield, Colo.

Filed Nov. 24, 1978, Ser. No. 963,317
Int. Cl.[2] G01R *5/28*
U.S. Cl. 324—458 **22 Claims**



1. In apparatus for detecting and measuring an electrostatic field, the combination comprising:

sensing means including first and second sensing plates; and

a rotary blade mounted for moving over said plates so as to vary the area of the plates exposed to an electrostatic field being measured, said sensing plates being shaped with a selected non-linear varying width and reversely arranged relative to one another for producing an electric output signal having a repetitive, non-symmetrical wave-form with a dissimilarity of shape and a reversal of position in each half-cycle with respect to a reference that indicates the polarity and the intensity of the measured electrostatic field.

4,222,008

APPARATUS FOR DIVIDING AN ARBITRARY WAVEFORM INTO EQUAL-AMPLITUDE STEPS

Reuben S. Mezrich, Rock Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,572
Int. Cl.[2] H03K *5/08*
U.S. Cl. 328—28 **3 Claims**

1. Apparatus for deriving a given signal indicative of the occurrence of each fixed incremental change, in at least a certain one of positive and negative directions, of the instantaneous amplitude of an input signal having an arbitrary waveform; said apparatus comprising:

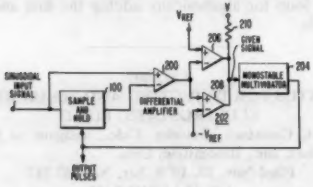
sample and hold means responsive to an applied control pulse for sampling the then-existing instantaneous amplitude of said signal input applied thereto to continuously derive a fixed output level substantially equal in amplitude to said sampled instantaneous amplitude,

a difference circuit for deriving an output having an instantaneous amplitude substantially proportional to the difference in the instantaneous amplitudes of respective first and second inputs thereto, wherein said difference circuit comprises a differential amplifier,

first coupling means for applying said arbitrary-waveform input signal as said signal input to said sample and hold means and also as said first input to said difference circuit,

second coupling means for applying said fixed level output from said sample and hold means as said second input to said difference circuit,

a signal level fixed increment detector responsive to the instantaneous amplitude of a signal input thereto achieving a fixed increment in level, with at least said certain one of positive and negative polarities, for producing said



given signal, wherein said signal level fixed increment detector includes at least one comparator for comparing the instantaneous amplitude of the output of said differential amplifier with a fixed amplitude of a reference signal of said certain one of said polarities to produce as said given signal a waveform having a characteristic indicative of the instantaneous amplitude of the output of said differential amplifier becoming substantially equal to said fixed amplitude of said reference signal,

third coupling means for applying said output from said difference circuit as said signal input to said signal level fixed increment detector,

a control pulse generator having said given signal applied as an input thereto for generating control pulse whenever a fixed incremental change, in at least said certain one of said positive and negative directions, of the instantaneous amplitude of said arbitrary waveform input signal occurs, and

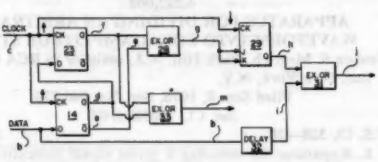
fourth coupling means for applying control pulses from said control pulse generator to said sample and hold means.

4,222,009

PHASE LOCK LOOP PRECONDITIONING CIRCUIT

Robert K. Moulton, North Wales, and John W. Thompson, Willow Grove, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,256
Int. Cl.[2] H03K *1/17, 5/156*
U.S. Cl. 328—72 **16 Claims**



1. A circuit for preconditioning a coded stream of data pulses which may or may not have a transition occurring during each cell time so the pulses may be applied to a conventional phase lock loop to enable it to lock on to the data cell frequency and to produce clock pulses synchronized with the data cell time, comprising:

a source of clock pulses for synchronizing bi-stable devices,

a source of data pulses,

a first bi-stable device connected to said data pulses for providing delayed data pulses and inverted data pulses which are delayed one-half cell time,

a second bi-stable device connected to said delayed data pulses for providing double delayed data pulses which are further delayed one cell time,

first gating means connected to said delayed inverted data pulses and to said double delayed data pulses for producing an output when and only when a single data pulse is present at the input,

a third bi-stable device connected to the output of said first gating means for producing formed data pulses which change when the input to said third bi-stable device is high,

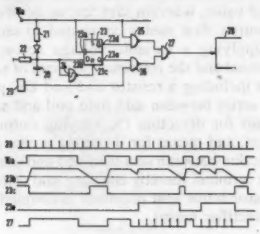
second gating means connected to the output of said third bi-stable device and to the source of data pulses delayed at least one data cell time for producing said preconditioned data pulses to be applied to said phase lock loop.

4,222,010

CONTROL DEVICE FOR RAPIDLY SETTING AN ELECTRONIC DIGITAL DISPLAY

Alfred Meisner, and Werner Arnold, both of Nuremberg, Fed. Rep. of Germany, assignors to Firma DIEHL, Nuremberg, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,756
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726383
Int. Cl.[2] H03K *1/16, 17/30*
U.S. Cl. 328—140 **9 Claims**



1. In a control device for a digital display unit in an electronic instrument, including a first pulse generator having first and second relatively moveable elements for producing a variable frequency output signal and a counter for receiving and counting the pulses produced by said first pulse generator, the improvement comprising:

discriminator means for determining whether the frequency of pulses produced by said first pulse generator exceeds a predetermined frequency value; and

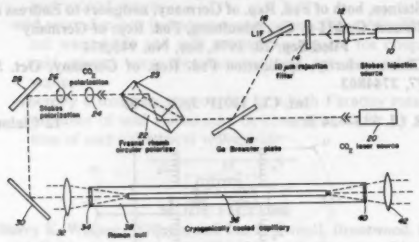
a second pulse generator which produces an output signal having a frequency greater than said predetermined frequency value and which is adapted to be connected to an input terminal of said counter by said discriminator means when said predetermined frequency value is exceeded,

whereby said counter receives the greater frequency output signal produced by the second pulse generator when the frequency of pulses produced by the first pulse generator exceeds the predetermined frequency value.

4,222,011
STOKES INJECTED RAMAN CAPILLARY WAVEGUIDE AMPLIFIER

Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 3, 1978, Ser. No. 948,267
Int. Cl.² H03F 7/05
U.S. Cl. 330—4.5 **107 Claims**



1. A Stokes injected Raman waveguide amplifier comprising:

capillary waveguide amplifier means for Raman scattering CO_2 laser radiation by rotational states of a diatomic molecule;

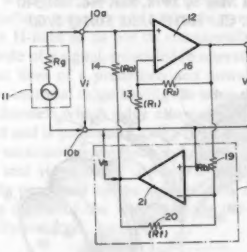
means for injecting a separate and independent source of Stokes radiation in said capillary waveguide amplifier means to induce amplification of said Stokes radiation;

whereby said Stokes radiation reduces required gain in said capillary waveguide amplifier to generate an amplified Stokes signal.

4,222,012
AMPLIFIER DEVICE

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 15, 1978, Ser. No. 915,675
Claims priority, application Japan, Jun. 29, 1977, 52/85657[U]
Int. Cl.² H03F 1/34
U.S. Cl. 330—85 **7 Claims**



1. An amplifier comprising:

an amplifier circuit having a noninverting input terminal, an inverting input terminal and an output terminal, said noninverting input terminal being receptive of an input signal from a signal source circuit;

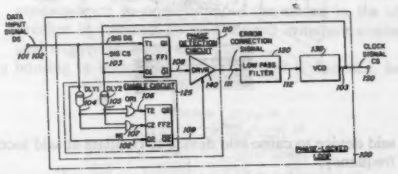
a first feedback path connecting the output terminal and the inverting input terminal of said amplifier circuit;

resistance means having a resistance value sufficiently larger than an impedance value of said signal source circuit and connected at one end to said noninverting input terminal of said amplifier circuit; and means connected to the other end of said resistance means for supplying to said resistance means a signal opposite in phase to said input signal so as to cause said amplifier circuit to have an input impedance which is smaller than the resistance of said resistance means to be suited for said signal source circuit.

4,222,013
PHASE LOCKED LOOP FOR DERIVING CLOCK SIGNAL FROM APERIODIC DATA SIGNAL

Thomas E. Bowers, 29W602 Butterfield Rd., and Dennis E. Tomlinson, 30W081 Avondale Ct., both of Warrenville, Ill. 60555

Filed Nov. 24, 1978, Ser. No. 963,270
Int. Cl.² H03B 3/04
U.S. Cl. 331—1 A **20 Claims**



1. A phase locked loop circuit **(100)** having an input terminal **(101)** and an output terminal **(150)** and adapted to generate periodic clock output signal pulses in phase coincidence with a synchronous data input signal occurring on said input terminal **(101)** and comprising aperiodically occurring data signal pulses, wherein said phase locked loop circuit **(100)** comprises:

variable frequency clock pulse generator means **(120, 130)** for generating said periodic clock signal pulses on said output terminal **(150)**; and

phase detection means **(110)** connected to said clock pulse generator means **(120, 130)** and to said input terminal **(101)** and responsive to said data signal pulses and to said clock signal pulses for generating error correction signal pulses; characterized in that

said phase detection means **(110)** is adapted to generate an error correction signal pulse upon occurrence of a phase difference between one of said data signal pulses and a corresponding one of said clock signal pulses and wherein said error correction signal pulse is indicative of the magnitude and direction of said phase difference; and

said generating means **(120, 130)** is responsive to said error correction signal pulse for adjusting the phase of said clock signal pulses in the direction of phase coincidence, whereby the adjustment continuously decreases the magnitude of said phase difference.

4,222,014
MICROWAVE/MILLIMETERWAVE OSCILLATOR USING TRANSFERRED ELECTRON DEVICE

John Ondria, Bethlehem, Pa., assignor to Alpha Industries, Inc., Woburn, Mass.

Filed Dec. 26, 1978, Ser. No. 973,001
Int. Cl.² H03B 7/14, 9/12
U.S. Cl. 331—107 DP **6 Claims**

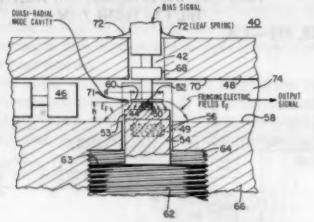
1. Microwave/millimeter wave signal translating apparatus comprising:

a waveguide transmission line having a predetermined impedance and a broad wall;

a transferred electron device having a predetermined impedance and being adapted to operate at a first frequency, said device being disposed within said waveguide transmission line in a predetermined position with a first termi-

nal having a flange generally parallel to said broad wall with a predetermined diameter electrically connected to ground potential and a second terminal electrically connected to a disc generally parallel to said broad wall disposed within said waveguide above said device, said disc being dimensioned to form a quarter wavelength quasi-radial mode cavity with said flange to enable said device to oscillate at a second frequency higher than said first frequency;

means connected to said device for coupling a D.C. bias to



said device to cause said device to oscillate at said second frequency;

means connected to said device for varying said device and said disc position above said broad wall to vary said second frequency of device oscillation; and

movable turning means disposed within and movable along the length of said waveguide substantially $(2n+1)\lambda/4$ from said device position for matching the impedance of said device to said predetermined impedance,

λ being the guide wavelength in said waveguide transmission line at said second frequency.

4,222,015

MICROWAVE CIRCULATOR ON A SUBSTRATE

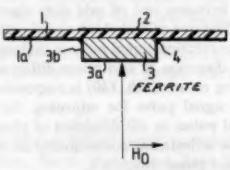
Wolfgang Hauth, and Wolfgang Ehrlinger, both of Backnang, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,316

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743305

Int. Cl.² H01P *1/38*

U.S. Cl. 333—1.1 **4 Claims**



1. A microwave circulator comprising

a substrate composed of dielectric material having first and second opposite surfaces, the first surface of said substrate having a metallized portion and a portion which is not metallized,

a resonator affixed to the second surface of said substrate opposite the portion of said first surface which is not metallized, said resonator having leads connected thereto,

a ferrite element having first and second opposite surfaces and a peripheral surface transverse to said first and second opposite surfaces, the first surface of said ferrite element having substantially the same dimensions as the non-metallized portion of the first surface of said substrate and being affixed directly to said non-metallized portion opposite said resonator, the second and peripheral surfaces of said ferrite element being metallized, and

an electrically conductive connection electrically and mechanically coupling the metallized portion of said substrate to the metallized peripheral surface of said ferrite element, said circulator being adapted for positioning within a magnetic field directed substantially perpendicular to said substrate.

4,222,016

HIGH FREQUENCY TRANSFORMER

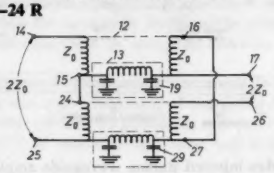
Don J. R. Stock, Schopfheim-Langenau, and Wilfried Sartorius, Steinen, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,974

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744863

Int. Cl.² H01P *5/02, 5/08*

U.S. Cl. 333—24 R **12 Claims**



1. High frequency transformer built from coaxial conductor sections, wherein a pair of coaxial conductor sections of equal length have external conductors which are insulated from each other, the input end of the external conductor of the first coaxial conductor section is connected with the input end of the internal conductor of the second coaxial conductor section and both of the unconnected input end internal and external conductors form input connections, and wherein the output end of the internal conductor of the first coaxial conductor section is connected with the output end of the external conductor of the second coaxial conductor section and both of the unconnected output end internal and external conductors form output connections.

4,222,017

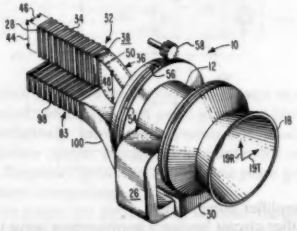
ROTATABLE POLARIZATION DUPLEXER

Peter Foldes, Wayne, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 9, 1978, Ser. No. 904,340

Int. Cl.² H01P *5/20;* H01Q *5/00*

U.S. Cl. 333—122 **7 Claims**



1. A rotatable polarization duplexer having a fixedly disposed axially symmetric aperture structure adapted for propagation of first and second polarized waves of differing wavelengths, comprising:

first means including a first flexible waveguide having a cavity that supports the TE_{10} mode of propagation of said first wave, and means for preventing propagation of said second wave;

an axially rotatable cylindrical waveguide that supports the

TE_{11} mode of propagation of said waves, said aperture structure being adjacent and axially aligned with the distal end of said cylindrical waveguide and being operatively coupled thereto, said first means having a transition end maintained adjacent and axially aligned with the proximal end of said cylindrical waveguide and operatively coupled between said flexible waveguide and said cylindrical waveguide; and

second means including a second flexible waveguide having a cavity that supports the TE_{10} mode of propagation of said second wave;

said second means including means connecting said cylindrical waveguide and said second waveguide for coupling said second wave therebetween and rejecting said first wave;

whereby a structure is provided in which Faraday rotation of either of said waves may be compensated for by rotation of said cylindrical waveguide.

4,222,018
MODE FILTERS

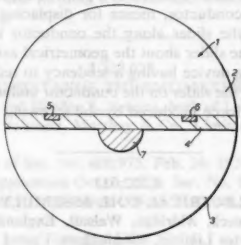
Barry K. Watson, Witham, and Ian L. Powell, Brentwood, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Jul. 7, 1978, Ser. No. 922,684

Claims priority, application United Kingdom, Jul. 7, 1977, 28452/77

Int. Cl.[2] H01P *1/16, 3/13, 1/18*

U.S. Cl. 333—251 **4 Claims**



1. A mode filter for millimetric waves including a circularly sectioned waveguide divided into n equal sectorial channels, mode perturbing means in said channels extending in the direction of the H-field so as not to substantially interfere with a wanted mode of a signal, provided in operation, but to perturb the current lines of a predetermined unwanted mode, and a conductive sectorial ridge having the same cross-section as the sectorial channels which ridge also extends in the direction of the H-field and is positioned along the longitudinal axis of the circularly sectioned waveguide in at least one of the sectorial channels, said ridge being of such a radius that differential phase shifts produced by the perturbation effect of the mode perturbing means of the wanted mode cut-off frequency are substantially reduced.

4,222,019
CIRCUIT BREAKER WITH MANUAL RELEASE

Arthur Rusch, Emmenbrüke, Switzerland, assignor to Weber AG, Fabrik Elektrotechnischer Artikel und Apparate, Emmenbrucke, Switzerland

Filed Jul. 31, 1978, Ser. No. 929,232

Claims priority, application Switzerland, Aug. 5, 1977, 9637/77

Int. Cl.[2] H01H *13/04, 9/34*

U.S. Cl. 335—6 **13 Claims**

1. A circuit breaker with a manual release comprising:

a manual lever;

a movable contact lever means for opening and closing the electrical circuit through the circuit breaker by moving between an opened and a closed position;

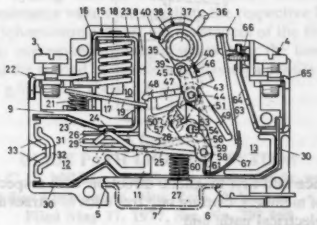
a magnetic triggering means, for sensing severe excess current running through the circuit breaker;

a toggle joint means, for moving said contact lever means from the closed position to the open position and from the open position to the closed position in response to movement of said manual lever and in response to said magnetic triggering means; said toggle joint means being disposed in a substantially straight line between said manual lever and said movable contact lever means, said movable contact lever means being swivably attached to said toggle joint means;

a hinged armature, connected to said magnetic triggering means;

a triggering lever, attached to said toggle joint means, for triggering said toggle joint means to cause said movable contact lever to open or close the circuit in the circuit breaker in response to said hinged armature contacting said triggering lever; and

a housing in which the circuit breaker is disposed, having



separate compartments for said magnetic triggering means, said movable contact lever means, and said toggle joint means, said magnetic triggering means and said movable contact lever means being disposed laterally from said toggle joint means, said compartment for said movable contact lever means being below said compartment for said magnetic triggering means and forming part of the bottom of said housing, said movable contact lever means being disposed in said compartment substantially parallel to the bottom of said housing; and

wherein said housing has grooves along the length thereof and wherein said toggle joint means further comprises a bow, articulated to said manual lever, a support lever, a pawl articulated to said support lever, a first pin, a second pin, a release lever, said bow, support lever and release lever all being swivelably mounted on said first pin, said pawl being capable of being locked in position by said release lever and being also swivelably mounted on said second pin, said second pin also supporting one end of said movable contact lever means, wherein both pins are displaceably guided in the grooves of said housing in the lengthwise direction.

4,222,020
CONTROL WINDING FOR A MAGNETIC LATCHING REED RELAY

Khaja M. Jameel, Glen Ellyn, and James V. Koppensteiner, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

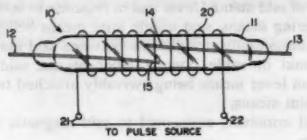
Filed Apr. 2, 1979, Ser. No. 26,140

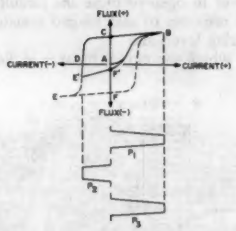
Int. Cl.[3] H01H *51/27*

U.S. Cl. 335—153 **5 Claims**

1. A relay including a pair of remanently magnetic members with free ends, said free ends normally biased open and movable with respect to each other to close an electrical path when said pair of members are magnetized in a first direction and to open the electrical path when said members are magnetized in an opposite direction, comprising:

singular means for establishing a first and second magnetic direction with respect to said pair or members connected tc a source of first pulses of a first polarity and amplitude and second pulses of a second polarity and of a amplitude substantially equal to half the amplitude of said first pulses; said means energized in response to one of said first pulse to





produce said first magnetic direction with respect to said pair of members, causing said free ends to attract and close said electrical path; and

said means energized in response to one of said second pulses to produce said second magnetic direction with respect to said pair of members causing said free ends to release and open said electrical path.

4,222,021

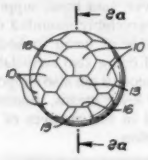
MAGNETIC APPARATUS APPEARING TO POSSESS ONLY A SINGLE POLE

Earle R. Bunker, Jr., 132 S. El Molino, Alhambra, Calif. 91801

Filed Jul. 31, 1978, Ser. No. 929,262

Int. Cl.[2] H01F *7/06*

U.S. Cl. 335—296 **1 Claim**



1. In apparatus of the character described,

(a) a plurality of like magnetic segments each having a north pole at one end and a south pole at the opposite end, said ends each having generally polygonal edge outline with the total number of edges being a multiple of 3, one end of each segment being larger in area than the opposite end thereof,

(b) said segments having sides shaped to closely interfit one another when assembled into a generally circular cross section form with the opposite ends of each segment spaced apart along a radius of said circular cross section form,

(c) a central non-magnetic core to which said opposite ends are connected,

(d) and wires wrapped about each of the segments to define solenoids therewith, there being recesses sunk in the sides of each segment to receive said wires.

4,222,022

VARIABLE INDUCTOR

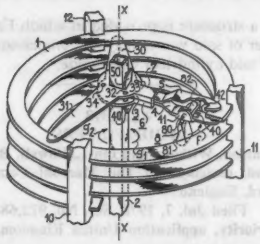
Gilbert Maillard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 5, 1979, Ser. No. 54,695

Claims priority, application France, Jul. 10, 1978, 78 20539

Int. Cl.[3] H01F *29/06*

U.S. Cl. 336—139 **4 Claims**



1. A variable inductor comprising a fixed winding constituted by a conductor wound in a circular helix, a slider for making contact under pressure at a point of application of said slider on said conductor, means for displacing the point of application of the slider along the conductor in a screwing movement of the slider about the geometrical axis of the helix, and a separating device having a tendency to reduce the pressure exerted by the slider on the conductor under the action of the centrifugal force produced by the screwing movement of said slider.

4,222,023

ELECTRICAL COIL ASSEMBLY

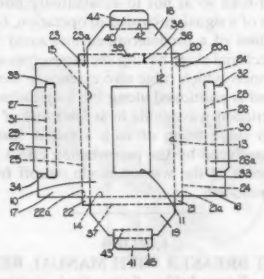
Keith J. W. Beech, Aldridge, Walsall, England, assignor to Lucas Industries Limited, Birmingham, United Kingdom

Filed Jun. 28, 1979, Ser. No. 53,082

Claims priority, application United Kingdom, Jul. 5, 1978, 28911/78

Int. Cl.[2] H01F *27/30*

U.S. Cl. 336—209 **6 Claims**



1. An electrical coil assembly comprising a substantially rectangular annular coil and a substantially dustproof cover therefor, said cover being formed of a folded blank of electrically insulating sheet material, said blank including a substantially rectangular annular portion and two pairs of mutually opposed flaps which are folded around respective sides of the aperture in the coil to seal the inner periphery thereof, wherein the flaps of both pairs are provided, in the unfolded blank, externally of the substantially rectangular annular portion

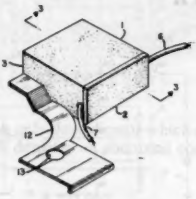
whereby end portions of all of the flaps are disposed on the same side of the electrical coil assembly.

4,222,024

THERMISTOR ASSEMBLY

Robert L. Ekowicki, Westbrook, Me., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 29, 1979, Ser. No. 7,099
Int. Cl.[2] H01C 7/04
U.S. Cl. 338—22 R 3 Claims



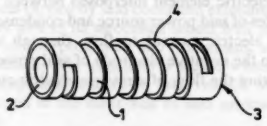
1. A thermistor assembly comprising a thermistor disc disposed within a closed ceramic container, means on said ceramic container securing a support arm thereto, lead-in wires attached to said disc and extending out through openings in said container, the greater part of said disc being spaced from said container in order to minimize heat transfer from said disc to said container, one end of said container being narrower than the other and forming a pocket into which said disc slip fits.

4,222,025

RESISTANCE THERMOMETERS

Gerald S. Iles, and Gordon L. Selman, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 660,975, Feb. 24, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,892
Claims priority, application United Kingdom, Feb. 28, 1975, 8424/75
Int. Cl.[2] H01C 7/04
U.S. Cl. 338—25 4 Claims



1. A temperature sensitive element of a resistance thermometer comprising an electrically conductive path formed upon a surface of a cylindrical substrate made from an electrically non-conducting material, said electrically conducting path comprising a layer of fused vitreous material containing an electrically conducting metal selected from the group consisting of gold, silver, platinum, palladium, rhodium, iridium, ruthenium, iron, cobalt, nickel and copper, said element having an outer protective coating made from a glaze.

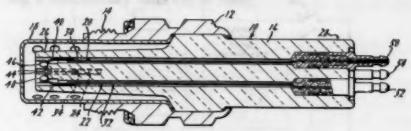
4,222,026

EXHAUST GAS SENSOR HAVING TWO TITANIA CERAMIC ELEMENTS

Elmer T. Heiney, III, Huntington Woods; Stanley R. Merchant, and Wells L. Green, both of Garden City, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,426
Int. Cl.[3] H01L 7/00
U.S. Cl. 338—34 2 Claims

1. An improved exhaust gas sensor of the type having first and second titania ceramic elements with the electrical resistances which vary both as a function of temperature, over the temperature range from about 350° C. to about 850° C., and as a function of the partial pressure of oxygen in exhaust gases produced by the combustion of a rich or lean (with respect to stoichiometry) air/fuel mixture, the first and second titania elements having electrodes interconnected and adapted for receipt of an externally supplied voltage, the first titania element, when subjected to lean-mixture exhaust gases at temperatures within the temperature range, having a resistance about three orders of magnitude or more greater than its resistance at corresponding temperatures when subjected to rich-mixture exhaust gases, the second titania element having, when subjected to cycling lean-mixture/rich-mixture exhaust gases, varying resistance values intermediate the respective lean-mixture and rich-mixture exhaust gas resistances of the first titania element at corresponding temperatures over the temperature range, and the second titania element having a density between about 3.2 g/cm^3 and about 3.8 g/cm^3.



4,222,027

GLIDE PATH LIGHTING SYSTEM

Johannes C. J. Mikkers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1977, Ser. No. 797,869
Claims priority, application Netherlands, May 24, 1976, 7605528
Int. Cl.[2] B64F 1/18; F21V 11/08
U.S. Cl. 340—26 4 Claims

1. An aircraft glide path lighting system comprising a light source, a lens spaced from said light source, the focal plane of said lens being located at a position between said lens and said light source, a screen disposed in said focal plane on at least one side of the optical axis of said lighting system, said screen cooperating with said lens and said light source to render visible to an operator of an approaching aircraft light of a predetermined color when the glide path of the aircraft is within a predetermined angle with respect to said optical axis, and a diaphragm disposed between said lens and said screen for masking a peripheral portion of said lens, said diaphragm having a noncircular opening which is wider in the horizontal direction than in the vertical direction to reduce dispersion and aberration of said lens in the vertical plane.

4,222,028

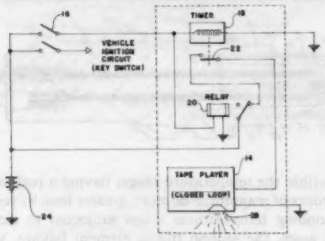
VEHICLE MESSAGE REMINDER SYSTEM

Peter G. Danchilla, 7459 12th Ave., #6A, Burnaby, British Columbia, Canada (V3N2k2)

Filed Oct. 31, 1977, Ser. No. 847,129
Int. Cl.[2] G08B 29/00
U.S. Cl. 340—52 D 2 Claims

1. A vehicle message reminder system connected to a conventional key operated ignition switch of a vehicle, comprising, in combination, a timer having a timing switch that is

closed to the ON position of the timing switch upon electrical energization of a coil in the timer, said timer coil being energized by turning on said key operated ignition switch and de-energized by turning off said key operated ignition switch; said timing switch being connected to the vehicle battery; a tape player of the closed loop type connected to said timing switch and to a relay; said relay energizing said tape player for



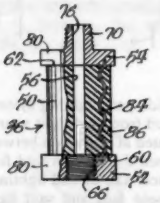
a period of time during which said ignition switch is off and said timing switch is in its closed ON position; said tape player including a loudspeaker and giving reminder messages relating to vehicle operations taking place after said vehicle is parked, in which said timer retains said timing switch in the ON position for a pre-set time period after the coil of the timer has been electrically de-energized by the turning off of the key operated ignition switch.

4,222,029

VIBRATION ISOLATOR

Harold E. Marquis, III, Sparland, and Nhiem D. Nguyen, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 5, 1978, Ser. No. 939,525
Int. Cl.[2] B60Q *1/00*; G01D *11/30*; G08B *21/00*; H01R *33/12*
U.S. Cl. 340—52 R **5 Claims**



1. In a vehicle (10) having an engine (14) with an air cleaner (20) and an indicator (32) at an operator's station (16) for indicating a clogged condition of the air cleaner (20), said indicator responsive to a pressure-responsive switch, the improvement comprising a vibration isolator for connecting said pressure-responsive switch to said engine including:

a resilient member (50) formed from resilient elastomeric material having a passageway (56) defined between opposite ends (60,62) thereof;

a pair of coupling elements (52,54) each having an opening in communication with said passageway and being connected to a respective end (60,62) of said resilient member (50), an air tube (22) running from said engine to said air cleaner and being connectable to one coupling element (54) and the switch (30) being connectable to the other coupling element (52); and

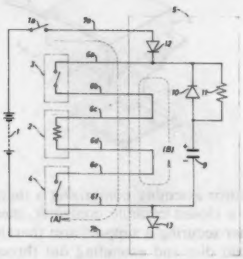
a conducting wire (84 or 90) connected to and extending between said coupling elements (52,54).

4,222,030

ELECTRIC CONTROL CIRCUIT FOR SAFETY APPARATUS IN AUTOMOTIVE VEHICLES

Toshio Yasui, Obu; Motoharu Naito, Okazaki, and Ken Asami, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 7, 1978, Ser. No. 940,447
Claims priority, application Japan, Sep. 8, 1977, 52-108310
Int. Cl.[2] B60R *21/08*
U.S. Cl. 340—52 H **5 Claims**



1. In an electric control circuit for a safety apparatus of an automotive vehicle, which control circuit comprises an electric power source, normally open switch means to be closed in the occurrence of a vehicle collision, electrically operated actuator means connected in series with said power source through said switch means to actuate said safety apparatus upon closure of said switch means, and a storage condenser connected in parallel with said switch means and said actuator means;

the improvement comprising:

a first electric element interposed between the positive electrodes of said power source and condenser for permitting an electric current from said power source to said condenser and said actuator means and interrupting an electric current from being discharged from said condenser through said element; and

a second electric element interposed between the negative electrodes of said power source and condenser for permitting an electric current to flow through said actuator means to the negative electrode of said power source and interrupting the flow of a reverse electric current.

4,222,031

WARNING DEVICE FOR A VEHICLE

Michio Okamoto, Kanagawa; Tohru Fukumura, Hatan; Minoru Ichikawa, Isehara; Masaru Uenoyama, Kanagawa; Masaaki Ichimura, and Masakazu Tateishi, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 2, 1978, Ser. No. 947,763
Int. Cl.[2] G08B *19/00*
U.S. Cl. 340—52 F **12 Claims**

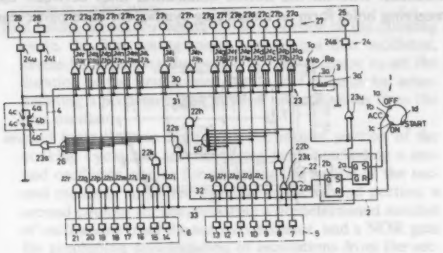
8. A warning device for a vehicle or the like, comprising:

a check unit sensor group including a plurality of sensors for detecting abnormal conditions at a plurality of check points;

a plurality of indicators corresponding to the sensors for indicating abnormal conditions which are detected by said sensors;

a control circuit, connected between the sensors and the indicator, said control circuit including first means for

driving all of the indicators when an abnormality is detected by any one of the sensors, and second means for



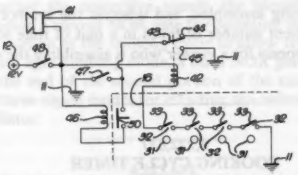
thereafter driving only the indicator which corresponds to the sensor which detected an abnormal condition.

4,222,032

VEHICLE COVER ALARM

Gary D. Speer, 3019 University Mall, Los Angeles, Calif. 90007

Filed Oct. 3, 1977, Ser. No. 838,573
Int. Cl.[2] B60R *25/10*; **G08B** *13/08, 13/14*
U.S. Cl. 340—63 **12 Claims**



1. A plurality of devices for use with a vehicle to signal movement of a protective cover relative to the vehicle, and in combination with the cover, the vehicle having wheel well panels, the respective devices adapted to be located proximate the respective panels, each said device comprising

(a) a first means carried by said cover and extending adjacent to the outer side of its associated wheel well panel, and

(b) a second means, proximate said first means, and carried by said vehicle, that produces a signal when said first means is displaced relative to said vehicle, said second means located at the inner side of said associated wheel well panel,

(c) and an alarm carried by the vehicle and wherein said plurality of second means include switches that are interconnected and also connected to said alarm such that said signal from any of said second means causes the alarm to activate.

4,222,033

AUTOMOBILE CUT-OFF ANTI-THEFT SYSTEM

Leonard L. Brown, 63 Tucson Dr., Greenville, S.C. 29611

Filed Apr. 2, 1979, Ser. No. 25,892
Int. Cl.[2] B60R *25/04, 25/10*
U.S. Cl. 340—64 **4 Claims**

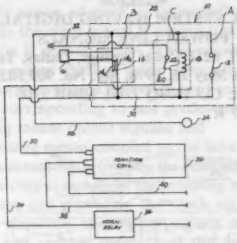
1. An automobile anti-theft system for deterring the unauthorized operation and theft of an automobile having a motor whose startup and operation is controlled by a starter switch through which power is supplied to an ignition coil for motor operation, said system comprising:

an alarm circuit for controlling operation of said automobile when activated and an unauthorized startup and operation of said auotmobile is attempted by an unauthorized person;

switch means for activating said alarm circuit;

first circuit means included in said alarm circuit which includes a time delay circuit electrically connected between said automobile starter switch and ignition coil receiving current when said alarm circuit is activated and said automobile is started to permit an initial unauthorized startup and operation of said automobile;

said time delay circuit interrupting the circuit of said ignition coil to terminate the operation of said automobile following a momentary interval of time;



a second circuit means included in said alarm circuit electrically connected to said first circuit means including a relay circuit energized by current flow shunted therethrough following interruption of said time delay circuit;

an audible signal source connected to said relay; and

said relay circuit energizing said audible signal source thus producing an audible signal in response to said flow of shunted current immediately after said momentary interval of time;

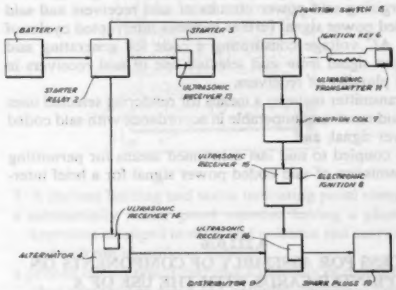
whereby interruption of automobile operation is immediately followed by an audible signal to discourage further attempted theft of the automobile.

4,222,034

VEHICULAR PROTECTIVE SYSTEM

Samuel Orenzow, 2244 Bronx Park East, New York, N.Y. 10467

Filed May 16, 1979, Ser. No. 39,346
Int. Cl.[2] B60R *25/04*
U.S. Cl. 340—64 **8 Claims**



1. A vehicular protective system for preventing unauthorized operation of an automotive vehicle having an electrical system including a plurality of components and an ignition system having a plurality of components and started by an ignition key, said vehicular protective system comprising

an ultrasonic transmitter combined with the ignition key and manually operable to produce and transmit an ultrasonic signal; and

an ultrasonic receiver having an electronic switch electrically connected to at least one of the components of the electrical system of a vehicle and between said one of said

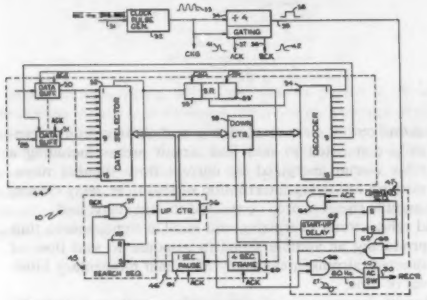
components and another one of the components of said electrical system, said switch being open upon the failure of said receiver to receive the signal transmitted by said transmitter thereby preventing the operation of said electrical system and the operation of the vehicle, said receiver closing said switch upon receiving the signal transmitted by said transmitter thereby permitting the operation of said electrical system and the operation of said vehicle.

4,222,035

MULTIPLEX SYSTEM HAVING DIGITAL CODED POWER LINE SIGNALS

Warren G. Lohoff, 6218 Cedar Springs, Dallas, Tex. 75235

Filed May 25, 1978, Ser. No. 909,502
Int. Cl.[2] H04Q *1/40*; H04B *3/00*
U.S. Cl. 340—167 R **4 Claims**



1. A multiplex system comprising:

a transmitter;

controller operably coupled to said transmitter for activating said transmitter;

a plurality of receivers remotely located from said transmitter;

a single pair of wires interconnecting said transmitter to said receivers for conducting a coded power signal from said transmitter by said controller;

each of said receivers having a decoding means enabling said receiver to respond to said coded power signal;

said coded power signal is an AC line voltage signal for energizing said power circuits of said receivers and said coded power signal further includes interrupted cycles of the AC voltage constituting a code for generating said output signal from said selected one of said receivers in said plurality of receivers;

said transmitter includes a means for rendering selected ones of said receivers inoperable in accordance with said coded power signal; and

means coupled to said last mentioned means for permitting transmission of said coded power signal for a brief interval.

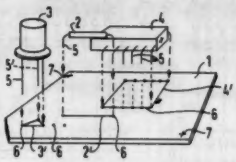
4,222,036

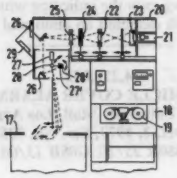
PROCESS FOR ASSEMBLY OF COMPONENTS ON PRINTED CARDS WITH THE USE OF A POSITION-LOCATING AID

Theodor Troukens, Oostkamp, Belgium, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,059
Int. Cl.[2] G08B *5/38*
U.S. Cl. 340—286 M **6 Claims**

1. A method for assembly of components on electrical printed cards with the use of a position-locating aid which operates electrically and which controls a point of light which forms a dot projected onto the printed card in accordance with a predetermined assembly program, comprising the step of: moving the point of light such that at least one connection line is formed by a series of dots between receiving holes placed in the printed card for connection wires of components to be mounted, wherein the dotted connection lines between the receiving holes form an identifying symbol for each particular





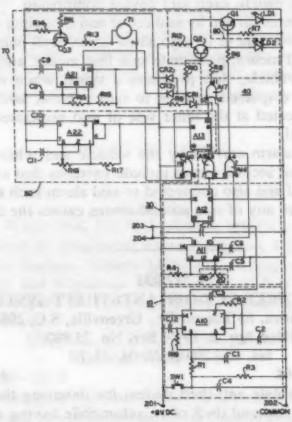
component being assembled, and wherein the symbol is projected a sufficient number of times in a unit of time so that a fixed image appears for a viewer who is assembling the components.

4,222,037

COOKING CYCLE TIMER

David J. Schaap, South Holland, Ill., and Donald L. Watrous, Liverpool, N.Y., assignors to General Electric Company, Carmel, Ind.

Filed Dec. 5, 1978, Ser. No. 966,629
Int. Cl.[2] G08B *5/00*
U.S. Cl. 340—309.1 **2 Claims**



1. An electrical circuit for timing a cycle for cooking a comestible in a cooking medium, the cooking cycle being a preselected period of time and including a first portion and a second portion, the circuit comprising:

means for connecting the circuit to a source of DC electrical energy;

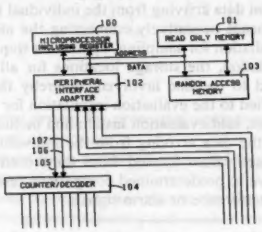
means for manually effecting turn-on of the circuit;
means including a first light-emitting diode for providing an indication that the circuit is turned-on and the cooking cycle is under way;
first timing means for timing the first portion of the cooking cycle, the first timing means including a first oscillator, means for adjusting the period of the oscillator to set the duration of the first portion, and a first counter for accumulating a predetermined number of oscillations from the first oscillator;
second timing means for timing the second portion of the cooking cycle, the second timing means including a second oscillator, means for adjusting the period of the second oscillator to set the duration of the second portion, a second counter for accumulating a predetermined number of oscillations from the second oscillator, and a NOR gate for precluding accumulation of oscillations from the second oscillator when the predetermined number is reached;
means including a second light-emitting diode and a transistor driver therefor for indicating the end of the first portion of the cooking cycle;
means for indicating the end of the second portion and thereby the cooking cycle including an audible indicator, a transistor driver therefor and a third oscillator for effecting pulsing operation of the audible indicator and the second light emitting diode; and
means for identifying both the end of the first portion and the end of the second portion of the cooking cycle and for effecting operation of the appropriate indication means for indicating the respective events, the identifying means including a second NOR gate for detecting the end of the first portion of the cooking cycle to allow turn-on of the second light-emitting diode, a third NOR gate for detecting the end of the second portion of the cooking cycle, and three signal diodes for effecting operation of the third oscillator.

4,222,038

MICROCOMPUTER KEYBOARD INPUT CIRCUITRY

Richard A. Magerl, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1978, Ser. No. 881,090
Int. Cl.³ G06F 3/02
U.S. Cl. 340—365 S **5 Claims**



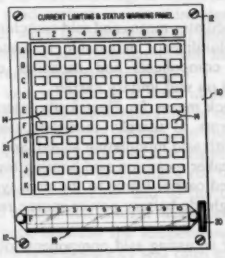
1. Keyboard input circuitry for a data processing system, comprising:
(a) keyboard circuitry including:
(i) keyboard means having a plurality of keys organized into K columns and J rows, where K and J are integer numbers greater than one, each key having a contact coupled to a corresponding Kth column conductor and a contact coupled to a corresponding Jth row conductor and providing continuity between the corresponding Kth column and Jth row conductor when depressed; and
(ii) counting means coupled to the keyboard means and adapted to sequentially provide in response to a clock signal K output signals for sequentially enabling the K column conductors of the keyboard means, said counting means further being responsive to a reset signal for providing a predetermined one of its K output signals; and
(b) data processing circuitry including:
(i) interface means for coupling the clock signal and the reset signal to the counting means, said interface means further being coupled to the J row conductors for sensing the states thereon indicative of the depressed and nondepressed keys of the respective enabled column, where a sensed predetermined first state indicates depressed keys and a sensed predetermined second state indicates nondepressed keys;
(ii) register means adapted to sequentially provide in response to the clock signal K output signals corresponding to the K output signals of the counting means, said register means further being responsive to the reset signal for providing a predetermined one of its K output signals corresponding to said predetermined one of the counting means output signals; and
(iii) processing means coupled to the interface means and register means for providing the reset signal to synchronize the output signals of the counting means and register means and providing the clock signal to synchronously sequence the output signals of the counting means and register means, and the processing means further being responsive to the sensed states of the keys from the respective enabled column of keys for identifying a depressed key by the sensed predetermined first state of the Jth row conductor and by the Kth output signal from the register means.

4,222,039

MODULAR PANEL OF TUNGSTEN LIGHT SWITCHES WITH CURRENT LIMITING INDICATING, AND SWITCHING CAPABILITY

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 30, 1976, Ser. No. 755,559
Int. Cl.² G08B 5/36, 21/00
U.S. Cl. 340—381 **16 Claims**



7. A current limiting and status indicating panel comprising:
a substantially planar panel member having a plurality of apertures arranged in rows and columns and carrying row and column identifying indicia;
a printed circuit board carrying a plurality of indicator-switches arranged in rows and columns corresponding to the rows and columns of the apertures in said panel member and disposed on one side of said panel member with a portion of said indicator-switches extending through said apertures in said panel member for manual operation from said other side of said panel member;
means supported by said panel and spaced apart from, but in alignment with, said rows and columns and carrying circuit identifying data in rows and columns corresponding to the rows and columns of said panel member; and,
means drivingly connected to said data carrying means for selectively positioning said data carrying means to display

a row of said circuit identifying data in alignment with the columns, each of said indicator-switches including a plurality of tungsten filaments and a series impedance element for providing a continuous current path through said plurality of filaments to permit selective energization of said plurality of filaments.

4,222,040

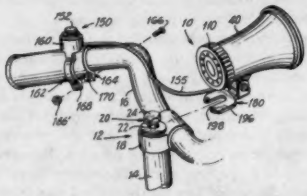
CYCLE-TYPE VEHICLE ATTACHMENT

Mason Benson, and James McIntosh, both of New York, N.Y., assignors to Carolina Enterprises, Inc., New York, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,924

Int. Cl.³ G08B *3/10*

U.S. Cl. 340—384 E **27 Claims**



1. An attachment for cycle-type pedal-powered handle-barred vehicles, particularly bicycles, tricycles and low-slung children's vehicles, of the type having child hand-operated multi-element means for steering the cycle-type vehicles over a surface to be traversed, the attachment comprising:

(a) a synthetic plastic material housing;

(b) a unitary carrier receivable in said housing;

(c) multi-component means for electronically generating a variable pitch ululating siren-type sound, including

(i) oscillator means for generating an audio carrier signal having a predetermined frequency,

(ii) switching means for generating a modulating signal having a frequency less than said predetermined frequency,

(iii) said oscillator means and said switching means including a plurality of actuatable transistor components, resistor components and capacitor components, all mounted on said unitary carrier,

(iv) feedback means for electrically interconnecting said components to thereby modulate said audio carrier signal with said modulating signal, and

(v) loudspeaker means on said housing for converting the modulated carrier signal to the siren-type sound;

(d) a small light dc battery power source receivable in said housing;

(e) means for actuating said components of said siren-type sound generating means, including

(i) normally-open electrical circuit means for normally disconnecting said power source from said components to thereby minimize battery drain, and

(ii) hand-operated switching means on an element of the multi-element steering means for closing said normally-open circuit means to thereby connect said power source with said components and generate the siren-type sound; and

(f) multi-part kit means for mounting said housing at a highly visible and elevated position on the steering means, including

(i) a mounting bracket having one bracket portion connected to said housing, and another bracket portion connected to a cycle-type pedal-powered handle-barred vehicle to thereby mount said siren-type sound generating means on a prominent forward region of the cycle-type vehicle.

4,222,041

DANGER ALARM SYSTEM

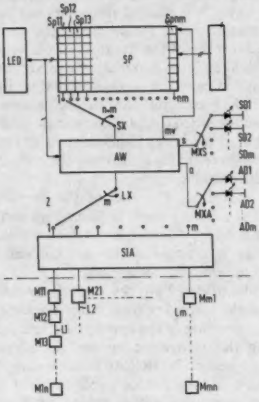
Romuald Von Tomkewitsch, Ebenhausen, and Otto W. Moser, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,392

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817089

Int. Cl.² G08B *29/00*

U.S. Cl. 340—517 **16 Claims**



1. In a danger alarm system utilizing a plurality of alarm devices connected to a central exchange by means of call circuits, in which the data of the individual alarm devices can be monitored in the central exchange by means of test control units and can be evaluated by means of an evaluation installation for the formation of alarm or trouble signals, the combination of a memory, provided in the central exchange, in which there is stored seizure as well as various characteristic data for each alarm device connectable in the system, an evaluation installation, a line sampling installation for cyclically sampling the individual call circuits and supplying the evaluation installation with alarm data arriving from the individual lines, memory sampling means operatively connecting the memory and evaluation installation for sampling, upon each step of the line sampling installation, the storage locations for all alarm devices connected to the line involved, whereby the memory content is supplied to the evaluation installation for the formation of set values, said evaluation installation including means for comparing the data arriving from the individual call circuits with the set values formed from the stored data, and means responsive to predetermined comparison results for the formation of interference or alarm signals.

4,222,042

DOOR ALARM

Richard E. Cantley, 1469 Shelley St., NE., North Canton, Ohio 44720

Filed Jun. 11, 1979, Ser. No. 47,576

Int. Cl.² G08B *13/08*

U.S. Cl. 340—546 **17 Claims**

1. A door alarm including:

(a) a housing adapted to be mounted on a door adjacent the hinged edge of said door;

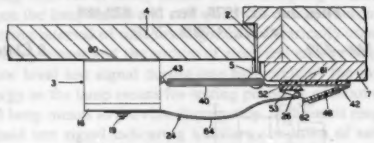
(b) audible alarm means contained within the housing;

(c) an actuator block adapted to be mounted on the door frame adjacent the alarm means housing;

(d) conductor means operatively connected to the alarm means and extending between the alarm means and actuator block;

(e) lever means mounted on the housing and connected to

the alarm means and cooperatively engageable with the actuator block and conductor means, with said lever means being movable upon opening of the door to contact the conductor means at the actuator block and actuate the alarm means; and



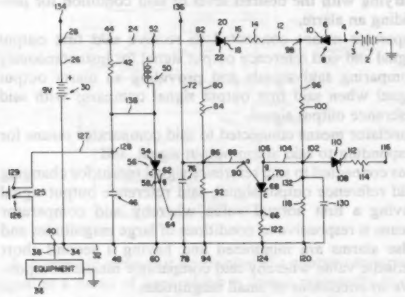
(f) means provided on the actuator block to maintain contact between the lever means and conductor means once the alarm means is actuated to keep the alarm means actuated upon closing movement of the door.

4,222,043

PORTABLE SELF-CONTAINED SECURITY SYSTEM

Stuart H. Malavasi, 3281 Valley Rd., West Millington, N.J. 07946

Filed Jun. 27, 1978, Ser. No. 919,498
Int. Cl.² G08B *13/14, 13/08*
U.S. Cl. 340—568 **6 Claims**



1. A security system for protecting equipment and the like from intruders, comprising:

the equipment to be protected connected to ground;

a first voltage source;

circuit means having a connection to the first voltage source so as to be powered thereby and another connection to the grounded equipment so as to be grounded therethrough;

the circuit means including current flow control means normally in an "off" state and rendered in an "on" state when one of the circuit connections is disconnected upon an intrusion on the protected equipment;

alarm means connected to the current flow control means and affected by said means being in the "on"state for providing an alarm;

a second voltage source; d

sensor means connected to the second voltage source and to the circuit means, and arranged with the equipment so as to be actuated to render the current flow control means normally in the "off" state to the "on" state upon an intrusion on the equipment; and

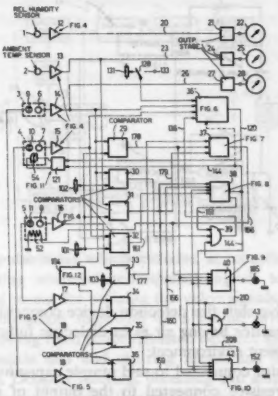
the alarm means connected to the current flow control means affected by said means in the "on"state to provide an alarm;

4,222,044

EARLY ICE-WARNING DEVICE

Marcel Boschung, Schmitten, Switzerland, assignor to Firma Marcel Boschung, Schmitten, Switzerland

Filed Apr. 27, 1978, Ser. No. 900,811
Claims priority, application Switzerland, May 4, 1977, 5583/77
Int. Cl.² G08B *21/00*
U.S. Cl. 340—581 **9 Claims**



1. A device for producing an early warning signal in anticipation of ice-formation on a road surface, of the type having ambient temperature sensing means, a first sensor unit comprising surface temperature sensing means and a first moisture detector, a second sensor unit comprising a second moisture detector and means for heating said second moisture detector, a group of comparators respectively connected to said first and second moisture detectors, first signal means for generating said early warning signal, second signal means for generating a signal when said road surface is wet, third signal means for generating a signal when ice has formed on said road surface, and means for actuating and deactuating said means for heating, wherein the improvement comprises:

a third sensor unit comprising a third moisture detector, means for determining the temperature of said third moisture detector, and alternate heating and cooling means;

control means connected to said surface temperature sensing means, to said means for determining the temperature of said third moisture detector, and to the output of said second signal means, said control means being responsive to the difference between the temperature of said road surface and the temperature of said third moisture detector, and responsive to the output of said second signal means to provide electrical power to said alternate heating and cooling means when the road surface is wet;

changeover means responsive to the temperature measured by said means for determining the temperature of said third moisture detector and to values measured by said first, second, and third moisture detectors for changing over the mode of operation of said alternate heating and cooling means to maintain a predetermined temperature difference between the temperature of the road surface and the temperature of said third moisture detector; and

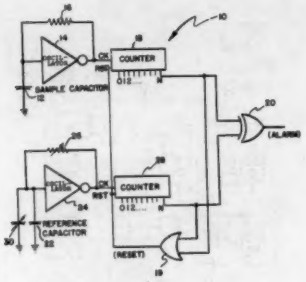
a first additional comparator connected to said third moisture detector and a second additional comparator connected to said means for determining the temperature of said third moisture detector, the inputs of said changeover means being connected to the outputs of said group of comparators and of said first and second additional comparators.

4,222,045

CAPACITIVE SHIFT FIRE DETECTION DEVICE

John M. Cholin, Hackensack, N.J., assignor to Firetek Corporation, Hawthorne, N.J.

Filed May 4, 1979, Ser. No. 30,269
Int. Cl.[2] G08B 17/10
U.S. Cl. 340—628 1 Claim



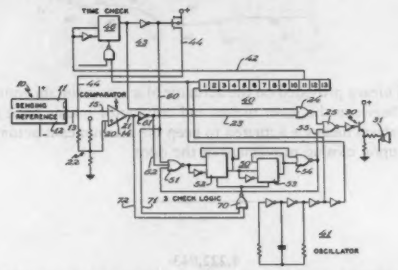
1. A capacitive shift fire detection device comprising:
a sample capacitor having air as its dielectric fully exposed to the ambient environment;
a firsr oscillator connected to said sample capacitor;
a feedback resistor connected to the output of said first oscillator and said sample capacitor;
a first counter to count the frequency of said first oscillator;
an OR-gate to reset said first counter at the end of a counting cycle;
an exclusive-OR-gate connected to the output of said first counter and leading to an alarm signal;
a reference capacitor having air as its dielectric partially sealed from the ambient environment such that the dielectric constant of the air dielectric is affected only by the temperature and humidity of the environment;
said reference capacitor being substantially identical to said first capacitor;
a second oscillator connected to said reference capacitor;
said second oscillator being substantially identical to said first oscillator;
a trimmable feedback resistor connected between said second capacitor and the output of said second oscillator to tune said second oscillator to the frequency of said first oscillator;
a second counter to count the frequency of said second oscillator;
said second counter being substantially identical to said first counter;
said second counter also being reset by said OR-gate at the end of a counting cycle;
said second counter also serving as an input to said exclusive OR-gate;
said exclusive OR-gate serving as input to an alarm circuit;
a match in frequency of said oscillators resulting in the output of said first and second counters being high simultaneously and the output of said exclusive OR-gate being low such that said alarm circuit is not activated;
a mismatch in frequency of said oscillators resulting in the output of one of said counters being high while the other is low and the output of said exclusive OR-gate being high, causing said alarm circuit to be activated;
said mismatch in frequency of said oscillators resulting from a change in capacitance in said sample capacitor resulting from a change in dielectric constant of its air dielectric resulting from the presence of particles of combustion in the ambient air.

4,222,046

ABNORMAL CONDITION RESPONSIVE MEANS WITH PERIODIC HIGH SENSITIVITY

B. Hubert Pinckaers, Edina, and Stephen A. Haglund, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 31, 1978, Ser. No. 929,488
Int. Cl.[2] G08B 17/10
U.S. Cl. 340—629 8 Claims



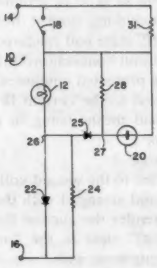
1. In a condition responsive device having a high sensitivity for detection of abnormal conditions and having an acceptable tolerance to false alarms, comprising
condition responsive means having a first ouput signal upon the presence of a predetermined level of a condition,
reference signal means having a reference output signal varying with the desired level of said condition for providing an alarm,
comparator means connected to receive said first output signal and said reference output signal for instantaneously comparing said signals and providing an alarm output signal when said first output signal compares with said reference output signal,
annunciator means connected to said comparator means for responding to said alarm output signal, and
means connected to said reference signal means for changing said reference output signal, said reference output signal having a first normal value whereby said comparator means is responsive to conditions of large magnitudes and false alarms are minimized and having a second short periodic value whereby said comparator means is responsive to conditions of small magnitudes.

4,222,047

LAMP FAILURE DETECTION APPARATUS

George E. Finnegan, 1712 N. Monitor, Chicago, Ill. 60639

Filed Nov. 6, 1978, Ser. No. 957,933
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—641 11 Claims



1. In lamp failure detection apparatus, an arrangement adapted to be connected to a source of alternating current

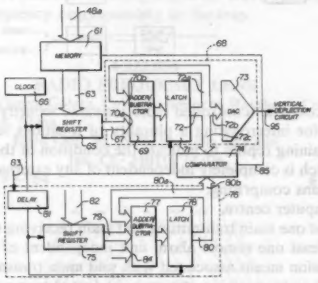
electrical energy and function in a dual mode such that the lamp can be lighted during the time period of one half-cycle of applied power and tested during the time period of the alternate half-cycle of applied power, said arrangement comprising: lamp means adapted to receive electrical energy during a testing interval of time; means for interrupting a circuit between the lamp means and said electrical energy source during a testing interval of time; testing means electrically connecting the lamp means and the source of electrical energy to provide a low level test signal during one half-cycle of the electrical energy to the lamp means for testing purposes without causing said lamp means to provide illumination; and means responsive to said test signal indicating a failure condition of said lamp means for generating a failure condition signal.

4,222,048

THREE DIMENSION GRAPHIC GENERATOR FOR DISPLAYS WITH HIDDEN LINES

Walter J. Johnson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 2, 1978, Ser. No. 911,765
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—747 **11 Claims**



1. A graphic generator for display of a continuous input data signal as a raster of lines which is drawn repeatedly in cycles and forms a three-variable image, wherein a first image variable is the side-to-side dimension of the raster lines, the second image variable is the top-to-bottom dimension of the vertical succession of raster lines, and the third image variable is the intensity information in the image, which is presented in the form of a corresponding vertical deflection of the raster lines, wherein the graphic generator comprises:

means defining the continuous input data signal in the form of data code words, each of which is representative of a selected portion of the input data and comprises a number of characters;

means storing said data code words;

means for retrieving from said storing means first and second data code words representing, respectively, input data which is to be displayed at the same relative position in two different raster lines, a selected one of which two different raster lines is a comparison reference line;

means comparing said first and second data code words, character by character; and

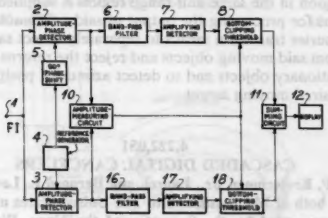
means blanking that portion of the raster line corresponding to the lesser of the compared pair of characters from said two data code words on a future drawing cycle of the raster, if the lesser of the compared pair of characters is from the data code word which represents a portion of the raster line which is a comparison reference line.

4,222,049

CIRCUIT ARRANGEMENT FOR ELIMINATING FIXED ECHOES IN A PULSE

Jacques Sirven, and Jean-Claude Marchais, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 23, 1978, Ser. No. 918,596
Claims priority, application France, Jun. 24, 1977, 77 19494
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—7.7 **11 Claims**



1. In a pulse radar which includes, at reception, means for demodulating intermediate-frequency signals to form video signals and means for utilizing the video signals,

the combination therewith of a circuit arrangement for eliminating fixed echoes situated between said demodulating means and said utilizing means and comprising, in series, Doppler filtering, detecting and amplifying means and bottom-clipping threshold means,

means for measuring the amplitude of the received signals upstream of said Doppler filtering means, and

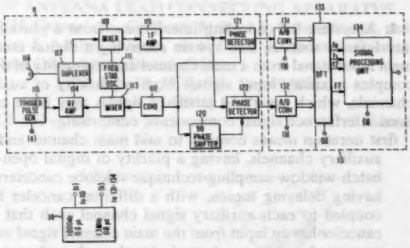
means for controlling the gain of said amplifying means as a function of said amplitude.

4,222,050

MOVING TARGET INDICATION RADAR

Eichi Kiuchi, and Takeru Irabu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,169
Claims priority, application Japan, Nov. 17, 1977, 52-138763; Oct. 31, 1978, 53-134301
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—7.7 **13 Claims**



1. A moving target indication radar comprising:

transmitting means for transmitting a microwave pulse of a predetermined width at a predetermined repetition period into space through an antenna rotating at a constant speed;

receiving means for receiving pulse returns from stationary and moving objects lying in the space scanned by said antenna, said pulse returns being received for every unit azimuth region corresponding to one microwave pulse in the form of a radar data signal having a resolution for unit range regions related to the width of said microwave pulse;

analog to digital converting means for converting the received radar data signal into digital samples;

continuous discrete Fourier transform means, responsive to N of said digital samples representative respectively of radar returns from N adjacent unit azimuth regions corresponding to N contiguous microwave pulses, for providing N Doppler frequency components representative of relative speeds of said stationary and moving objects lying in said unit azimuth regions every time radar data signals corresponding to an immediately adjacent unit azimuth region in the same unit range region is supplied; and

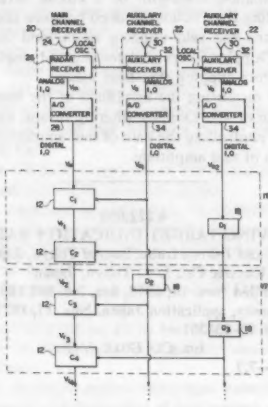
means for processing the output of said continuous discrete Fourier transform means to separately detect said returns from said moving objects and reject the returns from said stationary objects and to detect azimuthal position of the desired moving target.

4,222,051

CASCADED DIGITAL CANCELERS

Frank F. Kretschmer, Jr., Laurel, and Bernard L. Lewis, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1979, Ser. No. 4,516
Int. Cl.³ G01S *3/06*
U.S. Cl. 343—100 LE **3 Claims**



1. A system for canceling interference from a plurality of interference sources, said system receiving a digital complex main input signal from a main channel and a plurality of digital complex auxiliary input signals from a plurality of auxiliary channels, which main and auxiliary signals may have correlated interference signal components, comprising:

first iteration means coupled to said main channel and said auxiliary channels, having a plurlity of digital open-loop batch-window-sampling-technique sidelobe cancelers and having delaying means, with a different canceler being coupled to each auxiliary signal channel such that each canceler has an input from the main channel signal and its associated auxiliary channel signal, and each canceler providing a residue main signal output having reduced interference,

said cancelers being sequentially connected in a series in such manner that the main channel signal input to the first canceler of said series is the output from a main channel receiver, the main channel signal input to succeeding cancelers of said series being the residue output signal from a preceding canceler of said series, said auxiliary channel signal input to a canceler being delayed by said delaying means for the processing time of all preceding cancelers,

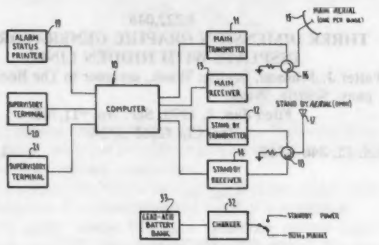
each canceler receiving said main channel signal input and said auxiliary channel signal input for forming a batch of samples of the main signal and the auxiliary signal, establishing a weight corresponding to the degree of correlation between the main signal and the auxiliary signal, delaying said samples until said weight is established, storing said weight for applying the weight to each of said samples of said auxiliary signal which is in said batch, and subtracting said weighted samples from said samples of the main signal for producing said residue output signal having reduced interference.

4,222,052

DATA TRANSMISSION SYSTEM

Ronald A. Dunn, 33 Kitchener Grove, East Preston, Australia

Filed Dec. 15, 1977, Ser. No. 860,675
Claims priority, application Australia, Dec. 15, 1976, 8498/76
Int. Cl.² G01S *3/02*
U.S. Cl. 343—112 R **13 Claims**



1. A computer controlled radio activated security and safety system for interrogating a plurality of locations sequentially and obtaining replies to indicate the condition of the locations and which is completely independent of any external transmission means comprising:

a computer centre,

at least one main transmitting and main receiving station and at least one remote alarm unit independent of any transmission means associated with said main transmitting and said main receiving station and adapted to monitor a predetermined parameter,

said remote alarm unit also including at least one receiver and transmitter,

said computer centre being adapted to interrogate said alarm unit with a predetermined digital signal and on command said alarm unit will indicate normal or false conditions and to monitor its reply, the reply being modified on any variation in the parameter.

4,222,053

MULTI-BAND VERTICAL ANTENNA

Donald R. Newcomb, Lake Crystal, Minn., assignor to Butternut Electronics Co., Lake Crystal, Minn.

Filed Nov. 3, 1978, Ser. No. 957,641
Int. Cl.² H01Q *5/00, 9/32*
U.S. Cl. 343—722 **12 Claims**

1. A vertical antenna for operation on five segments of the high-frequency spectrum comprising:

a. first resonator capacitor-inductor means vertically supported;

b. second resonator capacitor-inductor means vertically connected to said first resonator capacitor-inductor means;

c. first vertical radiating means connected to said second resonator capacitor-inductor means;

d. trap section telescoping radiating means vertically connected to said first vertical radiating means; and,

e. second vertical telescoping radiating means connected to

said trap means whereby a coaxial cable transmission line connects to said first resonator capacitor-inductor means and ground, and the entire vertical radiating length is

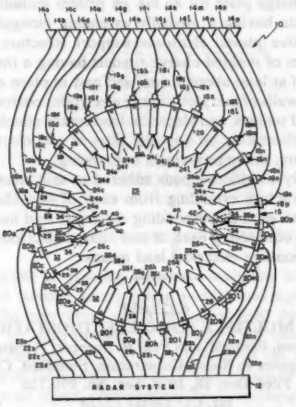
active on all five of said high-frequency spectrum segments in addition to being a quarter wave resonance on the frequency corresponding to the trap.

4,222,054

RADIO FREQUENCY LENS

Charles P. Capps, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 30, 1978, Ser. No. 955,846
Int. Cl.[2] H01Q *14/06*
U.S. Cl. 343—754 **8 Claims**



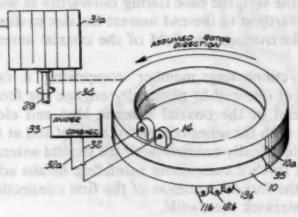
1. A radio frequency lens comprising:
(a) a dielectric substrate;
(b) a ground plane disposed on one surface of such substrate;
(c) a conductive material disposed on another surface of such substrate, a central portion of such conductive material forming a parallel plate region with a first portion of the ground plane, a portion of the periphery of such conductive material providing conductive members for a plurality of ports for the parallel plate region, such ports having dielectric material disposed between the conductive members and second portions of the ground plane, such dielectric material having a dielectric constant different from the dielectric constant of the substrate.

4,222,055

AROUND-THE-MAST ROTARY COUPLER

George A. Hockham, Valencia, and Ronald I. Wolfson, Northridge, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 18, 1979, Ser. No. 40,325
Int. Cl.[2] H01Q *3/02*; H01P *1/06*
U.S. Cl. 343—762 **10 Claims**



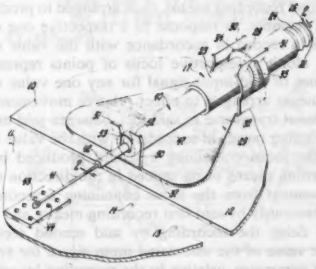
1. A rotary radio-frequency power coupler for an antenna array rotatable with respect to a generally vertical support structure, the center of rotation of said array falling within the perimeter of said support structure at least at and adjacent to the mounting location of said array, comprising:
first and second annular rings each comprising an inner and outer conductive perimeter surface and a series of spaced radially extending conductive webs therebetween to divide each of said annular rings into a series of circumferentially disposed waveguide sections, said rings being mounted coaxially in a facing relationship such that said waveguide sections are in electromagnetic communication forming a rotatable interface;
first and second feed means connected to said first and second annular rings, respectively, said feeds having a discrete transmissive line connection to each of said waveguide sections and at least one external port for said antenna from said first feed means and at least one external port for external connection from said second feed means.

4,222,056

SLOT ANTENNA LEAD CONNECTING APPARATUS

Joseph H. Graeser, Jr., Cortland; Richard A. Natoli, Girard, and Robert J. Adkins, Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 18, 1979, Ser. No. 49,105
Int. Cl.[2] H01Q *13/10*
U.S. Cl. 343—767 **2 Claims**



1. A pair of physically interlocking connecting members adapted to electrically connect the inner and outer conductors

of a coaxial antenna lead through connection to the female connector end thereof to the two members of a slot antenna while preventing interference by the radial electromagnetic field of the coaxial antenna lead with the electromagnetic field of the slot, the pair comprising, in combination:

a first electrically conducting connecting member comprising a flat base adapted for physical and electrical connection to one of said antenna members, a pair of arms projecting outwardly from the end of the base farthest from the slot and being adapted to physically engage the female connector end of the coaxial antenna lead and electrically connect with the outer conductor thereof, and a forked extension projecting outwardly from the end of the base nearest the slot, the base flaring outwardly in width from the end farthest to the end nearest the slot to dissipate the radial electromagnetic field of the coaxial antenna lead; and

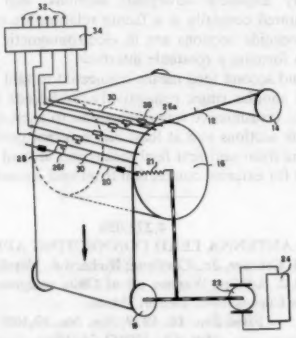
a second connecting member comprising a conductor adapted at one end to physically engage the female connector end of the coaxial antenna lead and electrically connect with the inner conductor thereof and at the other end to electrically connect with the second antenna member, and further comprising insulating means adapted to engage the forked extension of the first connecting member to interlock therewith.

4,222,057

RECORDERS

Antoine Cuvelier, Paris, France, assignor to Sefram, Paris, France

Filed Nov. 27, 1978, Ser. No. 964,101
Claims priority, application France, Nov. 25, 1977, 77 3546
Int. Cl.[3] G01D *9/00, 9/28*
U.S. Cl. 346—33 R **13 Claims**



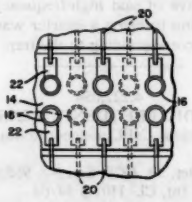
1. A recorder for recording a plurality of input signals as a function of a common parameter, comprising; a record support member for supporting recordings; first recording means and at least a second recording means, each arranged to produce on said support member, in response to a respective one of said input signals, a record in accordance with the value of said input signal along a respective locus of points representing possible values of said input signal for any one value of said parameter; means arranged to effect relative movement, having a component transverse to said loci, between said member and said recording means in accordance with the value of said parameter, the locus containing a record produced by said second recording means being spaced in the direction of said relative movement from the locus containing a record produced simultaneously by said first recording means; and means arranged to delay the recording by said second recording means of the value of the associated input signal for any one value of said parameter, relative to the recording by said first recording means of the value of the associated input signal for the same value of said parameter, whereby the respective loci containing records for that value of said parameter are coincident upon said member; the delay means having means arranged to store successive samples of the input signal associated with the second recording means, control means arranged to produce a periodic signal having a frequency dependent upon the speed of said relative movement, and output means arranged to receive from the storage means each said sample after an interval equal to a predetermined number of cycles of said periodic signal following the storage of that sample, whereby said second recording means produces a record corresponding to that sample with a delay, relative to the recording of the input signal associated with said first recording means for the same value of said parameter, determined by said predetermined number and the frequency of said periodic signal.

4,222,058

CHARGE PLATE WITH CONDUCTIVE PADS AND METHOD OF MANUFACTURE

James L. Gudorf, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 912,495, Jun. 5, 1978. This application Oct. 12, 1978, Ser. No. 950,623
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **3 Claims**



1. In a charge plate for an ink jet printer including a rigid support plate having a medially extending elongated slot, a nonconductive plastic electrode support structure provided with a series of molded charge tunnels having a thickness on the order of at least about 1 mm. and cast in place adheringly against the walls of said slot, charge electrodes coated upon the walls of said tunnels, and electrical lead means attached to said electrodes alternately on opposite sides of said electrode support structure, the improvement comprising:

electrically conductive pads adhered to said electrode support structure extending from each of said charge electrodes to each corresponding electrical lead means, electrically connecting each of said charge electrodes to each corresponding electrical lead means.

4,222,059

INK JET MULTIPLE FIELD ELECTROSTATIC LENS

Peter A. Crean, Penfield, and Paul R. Spencer, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

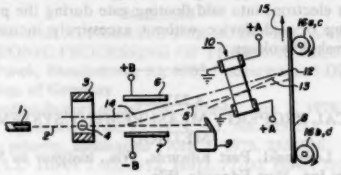
Filed Dec. 18, 1978, Ser. No. 970,723
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **12 Claims**

1. A cylindrical electrostatic lens for changing the trajectories of a plurality of continuously generated streams of discrete droplets following generally parallel trajectories when a droplet stream is above or below a center plane of the lens comprising

upstream, intermediate and downstream electrodes located at upstream, intermediate and downstream positions adjacent a plurality of the droplet streams and including means for coupling to a voltage source for establishing an upstream focusing electric field between the upstream and intermediate electrodes and a downstream focusing elec-

tric field between the intermediate and downstream electrodes,

said upstream and downstream electric field established by the electrodes including upper and lower focusing fields above and below a center plane over which the trajectories of charged droplets are not changed,



said upper focusing fields of the upstream and downstream fields focusing droplets in the parallel streams following trajectories above the center plane to a focal line on the center plane and

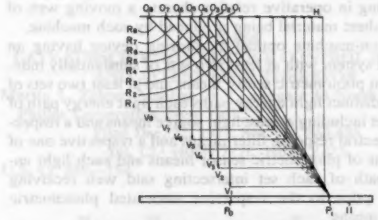
said lower focusing fields of the upstream and downstream fields focusing streams following trajectories below the center plane to the focal line.

4,222,060

INK JET PRINTING APPARATUS

Tsutomu Sato, and Takuro Isayama, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,211
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **8 Claims**



1. An ink jet printing apparatus including an ink jet head movable relative to a printing surface and signal generating means for generating a print signal of fixed duration causing the ink jet head to eject an amount of ink onto the printing surface corresponding to a magnitude of the print signal, a velocity of the ejected ink also corresponding to the magnitude of the print signal, characterized by comprising:

gate means for gating the print signal to the ink jet head;

gate pulse generating means for generating a gate pulse of fixed duration causing the gate means to be enabled to gate the print signal therethrough, the duration of the gate pulse being shorter than the duration of the print signal; and

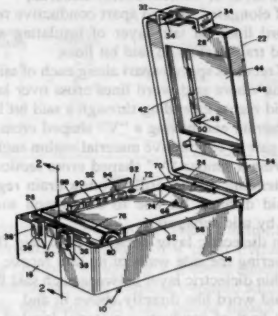
control means for variably controlling the gate pulse generating means to generate the gate pulse at a time after initiation of the print signal which corresponds to the magnitude of the print signal in such a manner that the ejected ink is incident on the printing surface at a same position at all magnitudes of the print signal.

4,222,061

TAMPER PROOF STRIP CHART RECORDER

John C. Stires, III, Box 988, Rambla de las Flores, Rancho Santa Fe, Calif. 92067

Filed Sep. 28, 1978, Ser. No. 946,794
Int. Cl.[2] G01D *15/00*
U.S. Cl. 346—145 **10 Claims**



1. A strip chart recording instrument, comprising:

a housing;

means for mounting a recording chart in said housing including a supply roll and a take-up roll with said chart extending across a space between said rolls;

drive means having a predetermind drive time rate connected for driving said take-up roll;

a writing support table extending between said rolls for supportint said chart for writing on one side of said chart;

an opening between one end of said table and said supply roll;

a condition responsive device mounted in said housing for recording on the other side of said chart through said opening;

a cover for said housing having an open position for providing access to said supply roll and said take-up roll, and a closed position for securing said rolls from access; and

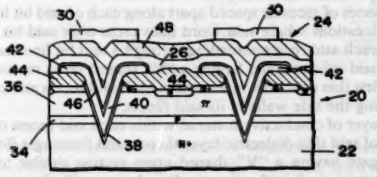
a hatch in said cover, said hatch having an open position for providing access to the portion of said chart over said table for writing on said chart, said hatch having a non-externally accessible latch for latching said hatch in a closed position for preventing access to said chart through said hatch opening when said cover and said hatch is closed.

4,222,062

VMOS FLOATING GATE MEMORY DEVICE

James D. Trotter, Saratoga, and Thurman J. Rodgers, Menlo Park, both of Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed May 4, 1976, Ser. No. 683,185
Int. Cl.[2] H01L *27/10*; G11C *11/40*
U.S. Cl. 357—45 **2 Claims**



1. A semiconductor programmable read only memory device comprising:

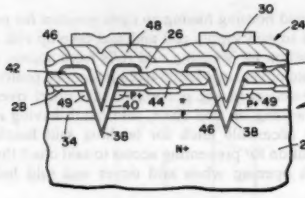
a semiconductor substrate having a preselected conductivity;
a layer of semiconductor material having the opposite conductivity from and extending across said substrate;
a series of elongated, spaced apart, diffused regions in said layer of semiconductor material having the same conductivity as said substrate and forming buried bit lines;
a layer of insulating material on said diffused bit line regions and said layer of semiconductor material;
a series of elongated, spaced apart conductive regions forming word lines on said layer of insulating material and oriented transversely to said bit lines;
a series of recesses spaced apart along each of said bit lines at locations where said word lines cross over said bit lines, each said recess extending through a said bit line and into said substrate and having a "V" shaped cross section;
a floating gate of conductive material within each said recess and having a similar "V" shaped cross section, each said gate extending downwardly from a drain region formed by a said diffused bit line to a common source region formed by said substrate;
a first thin dielectric layer between each said floating gate and covering the side walls of its said recess;
a second thin dielectric layer between each said floating gate and a said word line directly above it; and
surface bit lines of conductive material located on the surface of said device directly above said buried bit lines and connected thereto at preselected locations by contacts extending downwardly through said insulating layer.

4,222,063

VMOS FLOATING GATE MEMORY WITH BREAKDOWN VOLTAGE LOWERING REGION

Thurman J. Rodgers, Palo, Calif., assignor to American Microsystems, Santa Clara, Calif.

Filed May 30, 1978, Ser. No. 910,789
Int. Cl.[2] H01L *27/10*; G11C *11/40*
U.S. Cl. 357—45 **2 Claims**



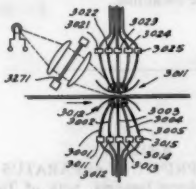
1. A programmable read only memory device comprising:
a semiconductor substrate having an N-type conductivity;
an upper layer of P-type semiconductor material extending across said substrate;
a series of elongated, spaced apart N-type regions in said layer of semiconductor material forming bit lines;
a layer of insulating material on said bit line regions and said upper layer of semiconductor material;
a series of elongated, spaced apart conductive regions forming word lines on said layer of insulating material and oriented transversely to said bit lines;
a series of recesses spaced apart along each of said bit lines at locations where said word lines cross over said bit lines, each said recess extending through a said bit line and into said substrate and having a "V" shaped cross section;
a first thin dielectric layer within each said recess and covering the side walls of its said recess;
a layer of conductive material within each said recess on top of said thin dielectric layer therein and forming a floating gate having a "V" shaped cross section similar to said recess, each said gate extending downwardly from a drain region formed by a portion of a said bit line to a common N-type source region formed by said substrate;
a second thin dielectric layer between each said floating gate and a said word line directly above it; and
a relatively narrow region of heavily doped P-type material in the wall of each said recess near its upper end adjacent to and just below the surrounding drain region of a bit line, and comprising a continuous ring of such material extending completely around the said "V" shaped recess, said narrow P-type region serving to increase the flow of hot electrons into said floating gate during the programming of said device without excessively increasing its threshold voltage.

4,222,064

OPTICAL PROPERTY MEASUREMENT SYSTEM AND METHOD

Fred P. Lodzinski, Port Edwards, Wis., assignor to Nekoosa Papers Inc., Port Edwards, Wis.

Division of Ser. No. 543,902, Jan. 24, 1975, and a continuation-in-part of Ser. No. 429,637, Dec. 28, 1973, abandoned, and Ser. No. 540,251, Jan. 10, 1975, Pat. No. 4,019,819. This application Mar. 7, 1977, Ser. No. 775,631
Int. Cl.[2] G01N *21/00*
U.S. Cl. 356—73 **24 Claims**



1. In the art of paper manufacture, apparatus for obtaining a quantitative measure of a plurality of paper optical properties, which comprises:
(a) an on-machine optical monitoring device for mounting on a paper machine and having a web receiving region for receiving in operative relation thereto a moving web of paper sheet material being produced by such machine,
(b) said on-machine optical monitoring device having an optical system with at least two sets of substantially independent photometric sensor means and at least two sets of partly distinct light energy paths each light energy path of each set including at least light source means and a respective spectral response filter means and a respective one of said sets of photometric sensor means and each light energy path of each set intersecting said web receiving region prior to the respective associated photometric sensor means,
(c) said at least two sets of partly distinct light energy paths comprising respective reflectance light energy paths and respective transmittance light energy paths having respective common spectral response characteristics of substantial bandwidths and of responses over such bandwidths for essentially simulating respective predetermined paper optical property measurement spectral functions such as to characterize said paper optical properties, and
(d) the respective photometric sensor means of each set being arranged on respective opposite sides of the web receiving region for collecting respectively reflected and transmitted light energy from a web of paper sheet material at said web receiving region and said sets of photometric sensor means providing respective sets of reflectance and transmittance output signals essentially characterizing respective sets of two essentially independent optical response parameters of the paper sheet material based on the respective predetermined paper optical property measurement spectral functions and such as to characterize said paper optical properties with substantially greater

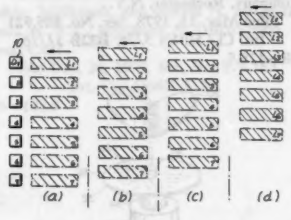
accuracy than any characterization of said paper optical properties by either one of such optical response parameters of the respective sets taken by itself.

4,222,065

METHOD AND APPARATUS FOR SCANNING AND FOR ELECTRONIC PROCESSING OF THERMAL PICTURES

Gunter Pusch, Bannholzweg 12, 6903 Neckargemund-Dilsberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 710,644, Aug. 2, 1976. This application Jun. 13, 1978, Ser. No. 915,213
Claims priority, application , Aug. 2, 1975, 2534586
Int. Cl.[3] H04N 5/33, 3/12; H01L 17/00; H04N 3/02
U.S. Cl. 358—113 14 Claims



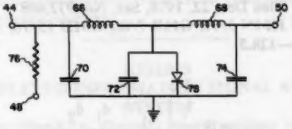
1. A method for scanning an electronic processing of thermal pictures with a multi-element detector array arranged at right angles to scanning line direction, comprising the steps of: repeatedly scanning every line of a thermal picture with individual detector elements; and superimposing free of delay corresponding lines in a reproduction thereof.

4,222,066

CATV SUBSCRIPTION SERVICE CONTROL DEVICE AND ATTENUATOR THEREFOR

Martin L. Zelenz, Manlius, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,455
Int. Cl.[2] H04N 7/16; H01P 1/22
U.S. Cl. 358—114 7 Claims



1. A circuit for jamming a radio frequency signal, said circuit comprising:

a switched buffer having signal input means for receiving said radio frequency signal, control input means for receiving a control signal, and an output;

an AND gate having a pair of input means for receiving said control signal and a jamming signal respectively, and an output; and

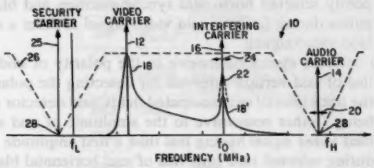
a switched attenuator having a signal input coupled to said buffer output, a control input coupled to said gate output, and an output means for providing in accordance with said control signal a jammed or unjammed signal.

4,222,067

TAMPER-RESISTANT TELEVISION SIGNAL SCRAMBLING

Joseph L. Stern, 27 W. 96th St., New York, N.Y. 10025, and Joseph Garodnick, 1 Wall St., Fort Lee, N.J. 07024

Filed Jun. 23, 1978, Ser. No. 918,645
Int. Cl.[2] H04N 7/16; H04K 1/02
U.S. Cl. 358—118 46 Claims



1. In a television communication system transmitting normal program information by means of a radio frequency signal disposed in a channel occupying a predetermined frequency band and including separate frequency-spaced audio and video carrier signals, said audio and video carrier signals being modulated, respectively, with the audio and video portions of said normal program information, the method of preventing reception of said normal program at a receiver with a predefined reception band when said receiver is detuned substantially from the nominal adjustment for receiving said channel, comprising the steps of:

producing a security carrier signal together with said transmitted normal program information at a frequency outside said predetermined frequency band and sufficiently removed therefrom in frequency to avoid any appreciable interference with reception when said receiver is in said nominal adjustment, the frequency of said security carrier being selected to permit reception of adjacent channels when said receiver is detuned substantially from said nominal adjustment; and

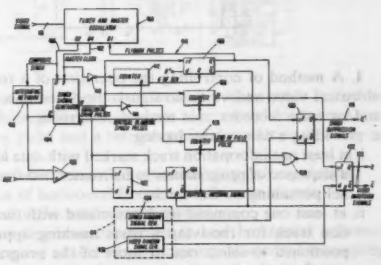
linearly combining said security carrier signal with said radio frequency signal.

4,222,068

SUBSCRIPTION TELEVISION APPARATUS AND METHODS

John R. Thompson, Los Angeles, Calif., assignor to American Television and Communications Corporation, Englewood, Colo.

Filed Nov. 2, 1978, Ser. No. 957,176
Int. Cl.[3] H04N 7/16; H04K 1/04
U.S. Cl. 358—120 18 Claims



1. A subscriber television system for selectively communicating a composite video signal having fields with horizontal trace lines separated by horizontal blanking pulses having front porches followed by horizontal synchronization pulses and the video signal further having vertical intervals separating the

fields, the vertical intervals containing vertical synchronization information followed by horizontal trace lines separated by horizontal blanking pulses, the system comprising:

(a) video encoder means for randomly inverting the polarity of said video signal by inverting the polarity of a trace line of randomly selected vertical intervals, and by inverting the trace lines of associated fields following said randomly selected vertical intervals, said encoder means further including means for suppressing the amplitude of randomly selected horizontal synchronization and blanking pulses during fields of said video signal to form a scrambled video signal;

(b) detector means responsive to the polarity of said trace line of said vertical intervals for detecting the polarity of the trace lines of said associated fields, said detector means being further responsive to the amplitude of said scrambled video signal having less than a first amplitude signal during selected time intervals of said horizontal blanking pulses for detecting the suppression of said randomly selected horizontal synchronization pulses, and

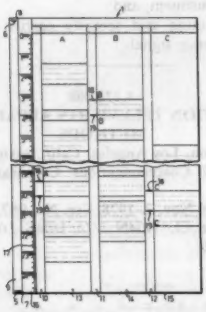
(c) decoder means responsive to said detector means for unscrambling said scrambled video signal, said decoder means including means for activating a switch for biasing said video signal with a second predetermined amplitude signal for a selected time interval following said detecting by said detector means of suppression of a horizontal synchronization pulse.

4,222,069

METHOD OF AND APPARATUS FOR PRESELECTING OPERATION OF TELEVISION OR RADIO RECEIVING AND RECORDING APPARATUS

Karl M. Groetschel, Montsalvatstrasse 1a, D-8000 Munich 19, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 929,126
Int. Cl.[2] H04N *5/44;* H04B *1/16*
U.S. Cl. 358—127 **17 Claims**



1. A method of controlling the operation of a recorder of electrical video and/or audio signals produced in a television and/or radio recorder, said method comprising:

a. providing a data carrier having

i. at least one information track marked with data identifying a sequence of programmes to be transmitted over a channel pertaining to that track,

ii. at least one command track associated with the information track for receiving a users marking appropriately positioned to select one or more of the programmes or part thereof,

iii. at least one time track having a sequence of index means along the time track representing the elapse of time,

b. marking said command track or tracks as required,

c. providing a control apparatus having means for sensing the marking or markings to generate control signals for establishing operation of the television and/or radio receiver and associated recorder,

d. applying the data carrier to the control apparatus and registering a point on the command track corresponding to the time of day then existing with the sensing means by effecting advancement of the data carrier relative to the apparatus under the control of the index means of the time track,

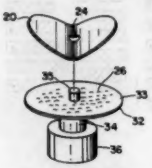
e. and thereafter relatively advancing the data carrier further to effect scanning of the command track with said sensing means and in a direction corresponding to the sequence of programme data and in synchronism with the elapse of time to generate said control signals.

4,222,070

RECORDING VIDEO INFORMATION ON A FLEXIBLE MASTER DISC

Dennis G. Howe, Fairport; Harold T. Thomas, Rochester, and James K. Lee, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,921
Int. Cl.[2] H04N *5/76;* B32B *31/16*
U.S. Cl. 358—128.5 **7 Claims**



1. A method of recording information on a flexible record device comprising the steps of:

forming a record-support device combination by superposing the flexible record device and an optically flat rigid support device with a liquid therebetween;

spinning the record-support device combination to obtain a layer of liquid less than about 500 angstroms in thickness between the record and support devices causing the flexible record device to conform to the surface configuration of the rigid support device; and

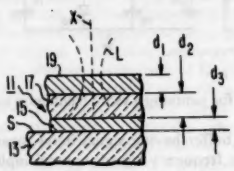
exposing the record device, while superposed on said support device, with a recording beam to record information on the record device.

4,222,071

SENSITIVITY INFORMATION RECORD

Alan E. Bell, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,408
Int. Cl.[3] H04N *5/76;* G11B *7/00;* G01D *15/10, 15/24*
U.S. Cl. 358—128.5 **12 Claims**



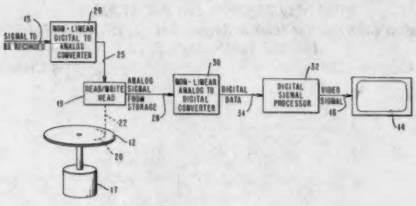
1. A record blank for use with a recording laser providing a light beam at a given frequency; said record blank comprising the combination of: a substrate having a light reflecting surface at said given frequency; a first coating overlying said light reflecting surface, said first coating being substantially transparent at said given frequency for permitting at least a portion of said laser light beam to pass through said first coating to said

light reflecting surface; and a second coating overlying said first coating, said second coating comprising a material which is light absorptive at said given frequency, for receiving light energy corresponding to information to be recorded on said record blank; the thickness of said second coating being such that said second coating is partially transmissive to light at said given frequency and being so related to the thickness of said first coating, and the optical constants of said reflective surface and the respective materials of said first coating and said second coating so as to establish a substantially anti-reflective condition for said record blank at said given frequency with respect to the light beam incident on said second coating; the improvement which comprises: employing a smooth, continuous, low melting point, low thermal diffusion length metal as said second coating.

4,222,072
VIDEO PLAYER/RECORDER WITH NON-LINEAR MARK LENGTH MODULATION

Jack H. Bailey, Millbrook, and Gerald H. Ottaway, Pleasant Valley, both of N.Y., assignors to DiscoVision Associates, Costa Mesa, Calif.

Filed Dec. 28, 1978, Ser. No. 974,183
Int. Cl.² H04N 5/76
U.S. Cl. 358—128.5 **8 Claims**



1. A system such as a video player or recorder including a storage medium such as a video disk having marks that are modulated in increments of length to represent a storage code block of n bits and where the system operates in code blocks of m bits, where m is greater than n, the improvement comprising:

means for translating in at least one direction between a system code block and a plurality of storage code blocks with a plurality of high order bits of a system code block being located in a high order bit position of each of a plurality of storage code blocks, and

means for transmitting the storage code blocks sequentially in at least one direction between the translating means and the storage medium.

4,222,073
MULTIPLEXED INFORMATION SIGNAL RECEIVING SYSTEM

Masayoshi Hirashima, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 10, 1978, Ser. No. 950,149
Claims priority, application Japan, Oct. 19, 1977, 52-126132; Oct. 19, 1977, 52-126133
Int. Cl.² H04N 7/04
U.S. Cl. 358—145 **10 Claims**

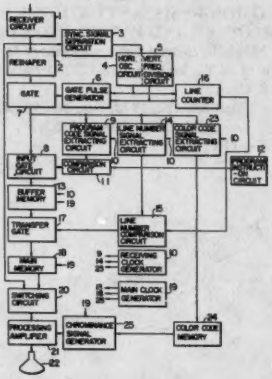
1. A multiplexed information signal receiving system comprising:

a receiving circuit for receiving a television signal on which a bi-level information signal is superimposed in a vertical retrace period;

a slice circuit for slicing the received information signal to reshape it into a bi-level signal;

an upper level detecting circuit for detecting an upper level of a start signal indicative of a reference phase and a reference amplitude inserted at a leading portion of said information signal;

a lower level detecting circuit for detecting a lower level of said start signal; and

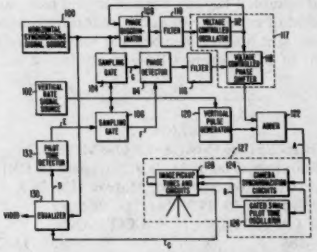


control means responsive to detection outputs from said upper level detecting circuit and said lower level detecting circuit for automatically adjusting a slice level of said slice circuit to a predetermined level.

4,222,074
HORIZONTAL SYNCHRONIZING SYSTEM

David W. Breithaupt, Maple Shade, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 952,221
Claims priority, application United Kingdom, Apr. 10, 1978, 13898/78
Int. Cl.² H04N 5/04
U.S. Cl. 358—149 **5 Claims**



1. A phase lock loop circuit for a television system for reducing the phase difference between a generated horizontal synchronizing pulse and a reference signal, said circuit comprising:

a controllable horizontal synchronizing pulse generator;

a source of horizontal frequency reference signals;

a source of the vertical rate signals;

first sampling means coupled to said horizontal reference source and to said vertical rate signal source for sampling said horizontal reference signals at the vertical rate;

second sampling means coupled to said source of vertical rate signals and to the output of said controllable horizontal synchronizing pulse generator for sampling said output signal at the vertical rate; and

a phase detector coupled to said first and second sampling

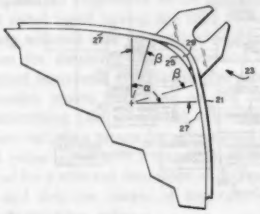
means for generating an error signal, said error signal being coupled to said controllable horizontal synchronizing pulse generator for controlling the phase of said horizontal synchronizing pulses.

4,222,075

IMPLOSION-RESISTANT CATHODE RAY TUBE STRUCTURE AND FABRICATION PROCESS

Robert B. Mitchell, Seneca Falls, and Harry R. Swank, Waterloo, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 12, 1978, Ser. No. 941,623
Int. Cl.[3] H04N 5/65
U.S. Cl. 358—246 **6 Claims**



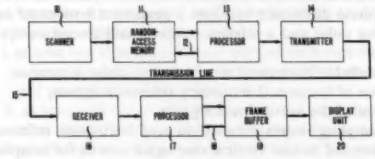
1. In an implosion-resistant cathode ray tube having an evacuated envelope with a face panel sealed to a flared neck portion wherein said flared neck portion has an electron gun assembly sealed therein and said face panel has a substantially rectangular-shaped viewing portion extending to an upturned flanged portion with corners having a given radius of curvature which blend into relatively flattened portions of said upturned flanged portion and a metal band encircling the upturned flanged portion of the face panel and exerting a compressive force thereon, the improvement comprising at least one substantially "L"-shaped bracket member having a base portion connected to an upstanding attachment portion with the base portion positioned intermediate said metal band and said corner of said upturned flanged portion of said face panel and of a size to provide contact of said encircling metal band and said upturned flanged portion of said face panel on said given radius of curvature of said corner intermediate said base portion of said bracket member and said relatively flattened portions of said upturned flanged portion of said face panel.

4,222,076

PROGRESSIVE IMAGE TRANSMISSION

Kenneth C. Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 15, 1978, Ser. No. 942,599
Int. Cl.[2] H04N 1/00; G01T 1/29
U.S. Cl. 358—263 **13 Claims**



1. An image transmission system (FIG. 1) including a scanning device (10), an addressable memory (11) for gray-scale light-intensity values corresponding to each picture element of an image to be transmitted, a transmission channel (15) for such image and an image display device (20) at the opposite terminal of such channel CHARACTERIZED IN THAT

numerical gray-scale values of discrete picture elements obtained in such scanning device (10) are taken from said addressable memory (11) in successive pairs and transformed by interaction with the contents of said addressable memory in a processor (13) into a hierarchical array of integral values according to their approximate averages from individual-element pairs to the entire image,

integral values are transmitted from said addressable memory (11) in words of uniform length level-by-level of the hierarchical array from the topmost level downward to elemental level over said channel, (15) and

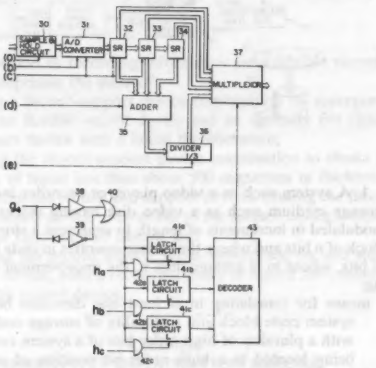
the transmitted image is progressively reconstructed (16, 17, 18 and 19) in successively finer detail in said image display device (20) at the opposite terminal of said channel adaptably to having transmission stopped at any hierarchical level up to the transmission of final detail.

4,222,077

ANALOG-DIGITAL CONVERSION METHOD, AND A PICTURE REPRODUCTION METHOD USING THE SAME

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed May 22, 1979, Ser. No. 41,525
Claims priority, application Japan, Jun. 2, 1978, 53-65665
Int. Cl.[2] H04N 1/40, 7/12
U.S. Cl. 358—280 **8 Claims**



1. A method of analog-digital conversion; wherein digital signals are produced at a certain sampling frequency rate corresponding to an first analog signal; and wherein values representative of the first analog signal are produced at a frequency rate which is some multiple n, where n is greater than 1, of the sampling frequency rate,

characterized in that the level difference between the first analog signal and a second analog signal which is a smoothed version of the first analog signal, is detected to obtain a third analog signal including extreme values;

that extreme positions in the third analog signal are discriminated in synchronization with n consecutively-produced representative values by setting negative and positive threshold levels to obtain a fourth signal including extreme position signals; and

that each digital signal produced is obtained from the n consecutively-produced representative values, as being: if the extreme position signal is detected, then the consecutively-produced representative value corresponding to said extreme position signal; otherwise, the average of the n consecutively-produced representative values.

4,222,078

METHOD AND APPARATUS FOR RECORDING OF WIDE BAND SIGNALS, PARTICULARLY VIDEO SIGNALS

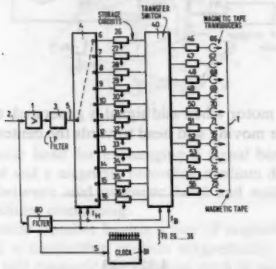
Gert Bock, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,478

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745337

Int. Cl.[2] H04N *5/79*

U.S. Cl. 360—9 9 Claims



1. In a method of recording broad band signals on magnetic tape (T) in a plurality of m tracks, the step of

temporally sequentially dividing the signals into m+1 signal groups;

storing the m+1 signal groups in m+1 memory circuits (26, 27 . . . 36) in sequential time intervals of predetermined duration;

sequentially reading out the m+1 signal groups from the m+1 memory circuits in respective time intervals which are longer than the storage time intervals;

and providing recording signals for subsequent recording of the signals on the plurality of tracks on the magnetic tape wherein, in accordance with the invention,

the step of sequentially reading out the signal groups from the m+1 memory circuits comprises the step of switching the signals recorded in the m+1 memory circuits sequentially to m tracks to provide m recording signals for recording on the m tracks of the tape,

wherein the (m+1)th signal will be recorded at one of the m tracks of the tape at a later time, and at a position thereon shifted from the position of the signal recorded on said track during recording of the first to the m-th signal.

4,222,079

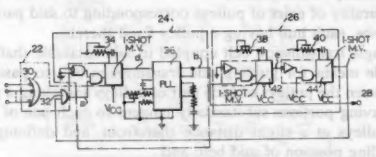
PCM RECORDING AND REPRODUCING SYSTEM

Ken Onishi, and Kunimaro Tanaka, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,525

Int. Cl.[2] G11B *5/00, 5/09*

U.S. Cl. 360—32 3 Claims



1. An apparatus for generating a speed indicating signal indicative of the speed of movement of a PCM recording medium for control of the speed of movement of the PCM recording medium, which signal is phase stable in the presence of splice editing, in a PCM recording and reproducing system for recording a PCM signal in a predetermined pattern on a plurality of record tracks disposed on the PCM recording medium and reproducing the PCM signal from the recording medium, said apparatus comprising:

a sensor means receiving the reproduced PCM signal for generating a plurality of phase signals, one phase signal for each record track of the recording medium, from synchronizing signals recorded on the plurality of record tracks of the record medium;

a selector means having said plurality of phase signals and a gating signal applied thereto for selectively passing one of said phase signals according to the phase of said gating signal;

a phase locked oscillator means having said selected phase signal from said selector means applied thereto for generating a speed indicating signal having a phase equal to the phase of said selected phase signal; and

a gate means having said speed indicating signal applied thereto for generating said gating signal having a predetermined phase relationship with said speed indicating signal, whereby when the phase of the synchronizing signals recorded on the plurality of record tracks of the record medium shift in the presence of a splice said gating signal causes said selector means to select the phase signal among said plurality of phase signals having a phase nearest to the phase of said selected phase signal prior to the splice, thereby minimizing the phase shift in said speed indicative signal generated by said phase locked oscillator means.

4,222,080

VELOCITY TOLERANT DECODING TECHNIQUE

Giles R. Frazier, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,969

Int. Cl.[3] G11B *5/09*

U.S. Cl. 360—40 19 Claims

1. A method of detecting data transitions or clock transitions in a sequence of signal transitions representing data encoded by phase encoding or frequency modulation, respectively, wherein the time duration between any two consecutive signal transitions is characterized as either long or short, comprising:

detecting the occurrence of each of said signal transitions;

generating a first pulse responsive only to each detection of a long time duration between two of said signal transitions; and

generating a signal indicative of the detection of a data transition or clock transition, respectively, responsive to the occurrence of an even number of signal transitions sebsequent to the previous data transition or clock transition, respectively, and the absence of said first pulse during the time between said previous data transition or clock transition and the last of said even number of signal transitions.

4,222,081

INFORMATION READING DEVICE FOR A MULTITRACK STORAGE DEVICE

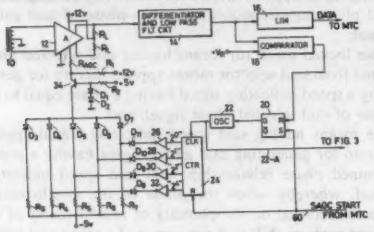
Yoshihisa Kamo; Zenji Tsutsumi, both of Kokubunji, and Hiroshi Maejima, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 21, 1978, Ser. No. 962,767

Claims priority, application Japan, Nov. 21, 1977, 52-155442[U]

Int. Cl.² G11B *5/02, 15/12*

U.S. Cl. 360—67 **5 Claims**



1. An information reading device for a multitrack storage device which stores in each of a plurality of tracks a reference signal and data comprising:

a plurality of read heads respectively provided in correspondence with each of the plurality of tracks;

a plurality of variable gain amplifiers respectively connected to each of said read heads;

a plurality of first means respectively connected to each of said read heads for respectively providing gain control signals to corresponding amplifiers in response to outputs of corresponding read heads so that the outputs of said corresponding read heads reach a predetermined value when said corresponding read heads read corresponding reference signals from the storage device;

second and third means, connected to said plurality of first means, for detecting first and second gain control signals, respectively corresponding to first and second ones of said read heads whose gains are respectively the maximum and minimum values; and

fourth means, connected to said second and third means, for detecting whether or not the difference between said first and second gain control signals exceeds a predetermined value.

4,222,082

MAGNETIC DISK APPARATUS WITH AUTOMATIC FAST HEAD ADVANCE

Mirco Raccanelli, Ivrea, and Carlo Romano, Montalto Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jun. 14, 1978, Ser. No. 915,548

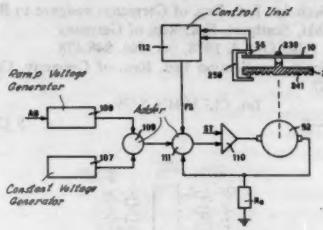
Claims priority, application Italy, Jun. 20, 1977, 68422 A/77

Int. Cl.² G11B *21/12*

U.S. Cl. 360—75 **3 Claims**

1. In an apparatus for recording binary information on a flexible magnetic disk comprising a rotatable plate, means mounting said disk on said plate for rotation with said plate, an electric motor having means for rotating said plate, a recording head, a movable arm having an end on which said head is mounted, a spiral guide carried by said plate and co-operating with said movable arm for radially moving said head from the periphery towards the center of said disk to synchronize the movement of said head with the rotation of said disk, and return means for quickly returning said head from the center towards the periphery of said disk, the improvement comprising:

control means connected to said head for controlling the recording of said binary information and for generating a signal indicative of a last binary information recorded on said disk, and accelerating means connected to said motor and with said control means for accelerating the rotation



of said motor when said signal is generated, to reduce the time for moving said head towards the center of said disk.

4,222,083

WRITING AND/OR READING APPARATUS FOR MAGNETIC TAPE CASSETTES

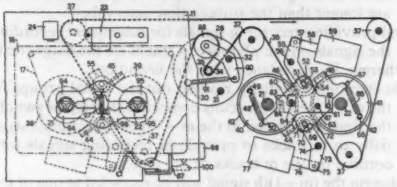
Sergio Tronzano, Caluso; Mirco Raccanelli, Ivrea, and Carlo Romano, Montalto Dora, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 18, 1978, Ser. No. 897,336

Claims priority, application Italy, Apr. 20, 1977, 67872 A/77

Int. Cl.² G11B *15/68*

U.S. Cl. 360—92 **4 Claims**



1. An apparatus for writing and/or reading binary information on magnetic tapes each one contained in a cassette of the type comprising a container and two coplanar spools on which the tape is wound said apparatus comprising:

a plurality of lodging seats each adapted to receive a single tape cassette, each one of said seats having a pair of hubs protruding therefrom for engaging the two spools of the corresponding lodged cassette for bidirectionally feeding the tape contained therein;

a single electric motor having a continuously and unidirectionally rotating shaft;

a plurality of pairs of pulleys corresponding to said pairs of hubs, each hub having a pulley fixed thereto;

a single transmission belt coupled to said rotatable shaft;

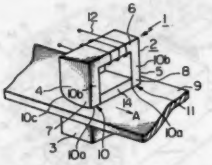
guide means for guiding said transmission belt to pass between the pulleys of each pair of pulleys and along a path having portions substantially tangent to each one of said pulleys at a slight distance therefrom, and defining an idling position of said belt; and

means selectively actuatable for coupling a tangent portion of said transmission belt to each one of said pulleys for effecting the rotation of said pulley and the hub and tape spool engaged therewith to feed the associated tape in one of the two possible directions, independently from the movement conditions of the other tape.

4,222,084
MAGNETIC HEAD

Shiro Nakagawa, Chiba, and Toshiki Aoi, Ichikawa, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,162
Claims priority, application Japan, Jun. 14, 1977, 52/69448
Int. Cl.² G11B 5/22, 5/25
U.S. Cl. 360—119 11 Claims



1. A magnetic head for exchanging a signal between said magnetic head and a magnetic recording medium during relative motion between said magnetic head and said magnetic recording medium, comprising:

a first magnetic member having a pair of magnetic leg portions and a connecting portion magnetically connected between said magnetic leg portions, each of said magnetic leg portions including an end portion facing said magnetic recording medium said end portion having only one sharp edge line, substantially perpendicular to the direction of said relative motion;

a coil wound on said first magnetic member; and

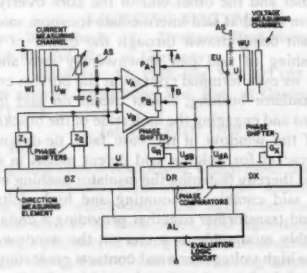
a second magnetic member for forming a closed magnetic path together with said first magnetic member, said second magnetic member facing both of said end portions of said first magnetic member in such a manner that said magnetic recording medium is positioned between said first magnetic member and said second magnetic member,

wherein the direction of the magnetic recording field applied to the magnetic recording medium is perpendicular to the surface of the magnetic recording medium such that the magnetic flux passes transversely through the magnetic recording medium whereby the magnetic recording is in the vertical magnetization mode.

4,222,085
METHOD AND APPARATUS FOR THE DISTANCE-SELECTIVE FAULT MONITORING OF ELECTRICAL LINES

Ivan De Mesmaeker, Fislisbach, Switzerland, assignor to BBC, Brown Boveri & Cie., Baden, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,943
Claims priority, application Switzerland, Sep. 6, 1977, 10836/77
Int. Cl.² H02H 7/26, 3/26
U.S. Cl. 361—80 11 Claims



11. An apparatus for the distance-selective monitoring of faults at electrical lines by means of a quadrilateral trip region including a first boundary and a secondary boundary, comprising:

means defining a measuring channel for the line current for forming reference signals of essentially the same phase and determining one of said boundaries of the trip region;

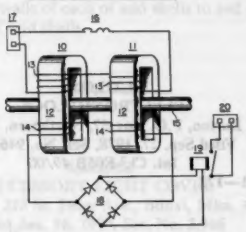
means defining a measuring channel for the line voltage for determining the other of said boundaries of the trip region; and

said means defining the measuring channel for the line current including phase shift means for selectively fixing the phase of the reference signals of essentially the same phase.

4,222,086
OVERCURRENT CONTROL DEVICE WITH FAIL-SAFE CIRCUITS

Robert S. Runyon, 7015 Brookview Rd., Hollins, Va. 24019

Filed Nov. 11, 1977, Ser. No. 850,841
Int. Cl.² H02H 3/08
U.S. Cl. 361—93 12 Claims



1. An electrical control device comprising

(A) a pair of magnetic cores,

(B) first means to provide substantially equal saturating magnetomotive force (MMF) in both said cores in response to normal or abnormal unidirectional input current,

(C) second means energized by alternating current to alternately maintain each of said cores in an unsaturated state when said normal or abnormal unidirectional input current is present, whereby the amount of said alternating current varies in correspondence with the amount of said input current,

(D) third means to detect that said alternating current exceeds a predetermined abnormal amount, and

(E) fourth means to sense the condition that said second means is energized, said fourth means providing a predetermined output voltage in response to said condition, said output voltage being substantially independent of said unidirectional input current.

4,222,087
PASSIVE TRIAC OUTPUT ASYMMETRY DETECTOR

Edward W. Goodrich, Palm Beach, Fla., assignor to Hawthorne Industries, Inc., West Palm Beach, Fla.

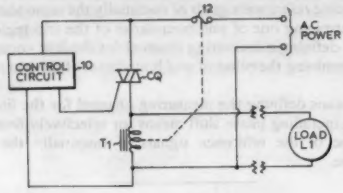
Filed Aug. 21, 1978, Ser. No. 935,473
Int. Cl.² H02H 3/00
U.S. Cl. 361—104 2 Claims

1. A passive device for protecting an AC load which is being controlled by a semiconductor element such as a triac or the like from a failure of the triac resulting in asymmetrical input wave power to the load, comprising:

an inductive means for generating a predetermined amount of thermal energy in response to a particular asymmetrical input wave connected in parallel with said load;

a thermal circuit breaking means that heats more rapidly than said load disposed in thermal contact with said inductive means, said thermal circuit breaking means having a

predetermined temperature threshold value upon which it opens, corallated in conjunction with the thermal energy generated by said inductive means, said thermal circuit



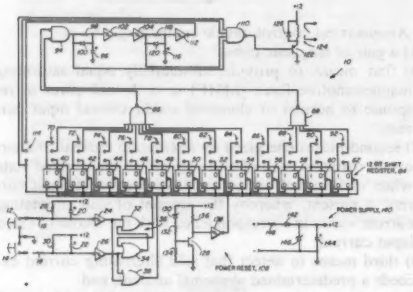
breaking means being connected in series between the AC input power and the load whereby when the thermally actuated circuit breaking means is open, power to the load will be removed.

4,222,088

ELECTRONIC LOCK

Richard H. Burton, P.O. Box 57, Northboro, Mass. 01532

Filed Sep. 27, 1978, Ser. No. 946,270
Int. Cl.[2] E05B *49/00*
U.S. Cl. 361—172 **8 Claims**



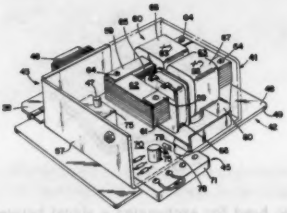
1. An electronic lock comprising:
two normally open electrical contacts serving as input means representing a binary zero and one;
means to close and reopen said input contacts;
an RS flip-flop loaded by the closing of one of said contacts with the binary digit represented by said contact;
a shift register loaded with the bit from said RS flip-flop when said input contact is reopened;
said shift register capable of being loaded with a plurality of bits, all bits being shifted one position as additional bits are entered;
said shift register containing a code to open said lock when said shift register is fully loaded with bits corresponding to a predetermined code;
at least one NAND gate;
said determined code being set by jumper wires from output terminals on said shift register to said NAND gate;
an integrating one-shot delay which receives the output of said NAND gate such that when said shift register contains said predetermined code, said delay is enabled;
a relay to open said lock at the end of said delay;
a power supply to furnish electrical power to said lock.

4,222,089

OIL BURNER IGNITION AND CONTROL PACKAGE

Robert B. MacAskill, Jr., Bay Village, and Archie R. Cornell, Avon Lake, both of Ohio, assignors to The Scott & Fetzer Company, Westlake, Ohio

Filed Nov. 10, 1977, Ser. No. 850,428
Int. Cl.[2] F23Q *3/00*
U.S. Cl. 361—263 **8 Claims**



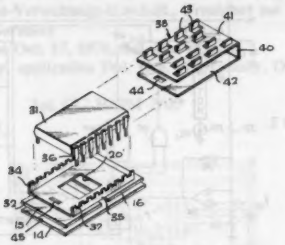
7. An electronics components package or assembly for an oil burner unit comprising ignition electrodes, a housing containing both a control system board and an unpotted ignition transformer, the housing having a base plate, the control system board extending from one end of the housing to an intermediate location, the transformer extending from the other end of the housing to said intermediate location, the control system board being spaced above the housing base plate for mounting of circuit elements or interconnections on the underside as well as on the topside of the board, the transformer having a core of U-I configuration and a pair of side-by-side secondary coils between the ends of the core and each of which is wrapped around its associated one of the U-legs, with its terminal wire leading from an axially and transversely central terminal point at its bottom side, only a single primary coil wrapped around its own length portion of only one of the U-legs to provide a bilaterally asymmetric coil arrangement, said control system board being connected to said transformer and including means for interrupting the operation of the transformer in intervals between ignitions of an associated oil burner, each end of the core being free of coils, combined mounting and high voltage tap means comprising a bracket understraddling the coils and fixed to and supporting each end of the core and itself having a base face for supported contact with said housing base plate and high voltage bushing means comprising a pair of insulator bushings joined together side-by-side as a single molding and extending from below said base face and said housing base plate directly upwardly through windows in said housing base plate and said base face and into apposition with said terminal points, said bracket supporting the core on the housing base plate so that the core is spaced above the base plate a greater distance than is the control system board, one end of the core being at the end of the housing associated with the transformer and the other end of the core overlying the control system board at said intermediate location, said terminal wires each being drawn through the center of its own insulator bushing of said pair downwardly into anchoring contact with its own terminal contact at the bottom end of its associated insulator bushing, detent means on said insulator bushing means and engaging the underside of the bracket at the periphery of the window in the base face, tie-down means within the bracket for holding said detent means in said engagement and thereby fastening the insulator bushing means to the bracket, said combined mounting and high voltage tap means and said transformer together providing a unitary nonpotted assembly mountable as a unit on the windowed base plate with the high voltage terminal contacts projecting below the window of the base plate for electrical contact with said electrodes and operation of the electrodes by the transformer.

4,222,090

MICROMODULAR ELECTRONIC PACKAGE

Richard A. Jaffe, 24115 Bessemer St., Woodland Hills, Calif. 91367

Filed Nov. 25, 1977, Ser. No. 854,846
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—386 1 Claim



1. A micromodular electronic component package comprising:

an electrically insulative base member;

a pair of electrically conductive members carried on said base member in fixed spaced apart relationship so as to define a gap between adjacent ends of said conductive members;

a rigid spacer of electrically insulative material fixly carried on said conductive members and provided with a central cavity exposing portions of said conductive members and said gap therebetween;

a first electrical component secured to said rigid spacer within said cavity so as to totally occupy said cavity and having connective terminal ends in electrical and mechanical securement with the respective exposed portions of said conductive members;

said conductive members include lugs carried on the edges thereof outwardly projecting from the perimeter of said component package and being fully exposed for external connection therewith;

said electronic component package further incudes a second electrical component and a heat sink means substantially surrounding said second electrical component and arranged in heat transference relationship therewith;

said heat sink means is a clip-like element of U-shaped configuration in side elevation;

said heat sink element is releasably arranged about said second electrical component in snap-lock relationship;

said heat sink element includes a plurality of fins outwardly projecting from an exposed surface thereof in heat dissipating transference with surrounding environment;

said conductive member lugs are arranged at opposite ends of said package and outwardly project from opposite sides of said package.

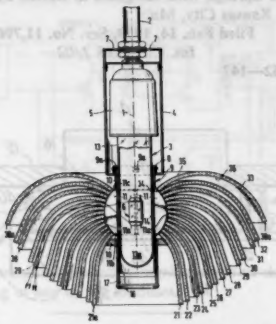
4,222,091

LIGHTING SYSTEM

Christian Bartenbach, 1, Croissant-Rust-Strasse, D-8000 Münich 80, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,192
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717773
Int. Cl.[2] F21V 7/04
U.S. Cl. 362—32 14 Claims

1. A lighting system comprising a high input lamp constituting an approximately point-shaped light source and light-directing means which direct the light from the lamp to a determined area to be illuminated, said light-directing means comprising a plurality of transparent shells disposed about said high output lamp, each of said shells having a central opening, an inner rim face about said opening and an outer rim face about the periphery of said shell, said inner faces having edges in contact with one another, said edges defining a rotational body about said light source, at least a major portion of the light emitted by said lamp being received by the inner rim faces



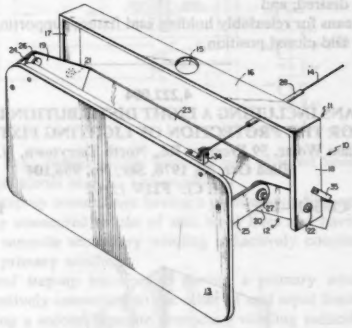
of said shells and being transmitted by total reflection between the opposite side walls of each of said shells to and out of said outer rim faces of said shells.

4,222,092

ACCESSORY LIGHT COVER

Richard L. Bray, 213 St. Peter Ave., Biloxi, Miss. 39531

Filed Jan. 16, 1979, Ser. No. 3,946
Int. Cl.[3] B60Q 1/00
U.S. Cl. 362—80 5 Claims



1. A movable protective-shield covering for accessory lights on vehicles, said covering comprising:

a U-shaped frame member connectable to said vehicle at a single point above said accessory lights on said vehicle so that said U-shaped frame member partially surrounds said light;

a U-shaped lever arm pivotally connected to said U-shaped frame at two points;

a light cover plate member pivotally connected to said lever arm member at two points so as to allow said plate to pivot from a vertical to a horizontal position for covering and uncovering said light; and

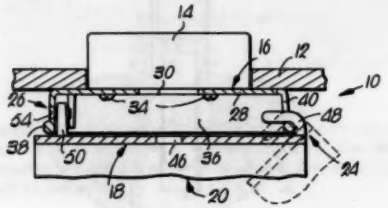
a cable means for moving said cover plate from said vertical to said horizontal position, said cable means connected at a first end to said cover plate at a point such that said cover plate may be pivoted about said pivotally connected points.

4,222,093

LIGHT MOUNTING FIXTURE ASSEMBLY

Octavio G. Garcia, Prairie Village, Kans., and Peter A. Lambert, Excelsior Springs, Mo., assignors to Devine Lighting, Incorporated, Kansas City, Mo.

Filed Feb. 14, 1979, Ser. No. 11,796
Int. Cl.³ F21S 1/02
U.S. Cl. 362—147 6 Claims



1. A light fixture assembly, comprising:

an apertured back plate adapted to be secured to a support surface such as a wall or ceiling with electrical wiring for a fixture passing through said aperture;

a fixture-supporting plate;

means for connecting said light fixture to said fixture-supporting plate;

means for detachably and pivotally mounting said fixture-supporting plate to said back plate for selective movement of the fixture-supporting plate and fixture between a closed, operative position wherein the back plate and fixture-supporting plate are adjacent one another, to an open position wherein said fixture-supporting plate is pivoted from the back plate allowing access to the electrical wiring for the light fixture, and for complete detachment of the fixture-supporting plate and the back plate as desired; and

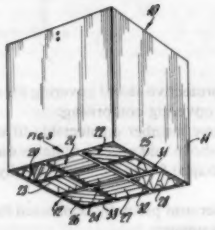
means for releasably holding said fixture-supporting plate in said closed position.

4,222,094

MEANS INCLUDING A LIGHT DISTRIBUTION LOUVER FOR THE PROTECTION OF LIGHTING FIXTURES

William Wolar, 59 Fremont Rd., North Tarrytown, N.Y. 10591

Filed Oct. 30, 1978, Ser. No. 956,104
Int. Cl.³ F21V 11/02
U.S. Cl. 362—279 13 Claims



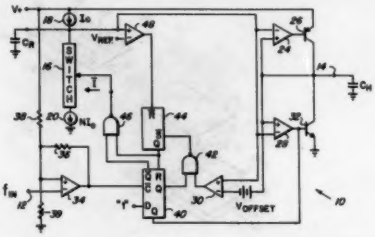
1. Means for protecting a lighting fixture comprising a hollow housing, means at one end of said housing for attachment to a lighting fixture, a louver assembly carried by and closing the other end of said housing, said louver assembly being formed of a plurality of individually adjustable sections each having a peripheral wall and light directing vanes for directing light at selected angles whereby desired light distribution characteristics may be attained with selected sections and the positioning thereof in the louver assembly.

4,222,095

FREQUENCY TO VOLTAGE CONVERTER

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,828
Int. Cl.³ G01R 23/06
U.S. Cl. 363—8 4 Claims



1. Frequency to voltage converter for producing an output analog voltage proportional to the frequency of an alternating input signal, comprising:

first circuit means for generating an output signal having a variable peak magnitude, said variable peak magnitude of said output signal being controllable;

peak detector means receiving said output signal from said first circuit means for producing an analog voltage having a magnitude which is representative of the peak magnitude of said output signal from said first circuit means; and

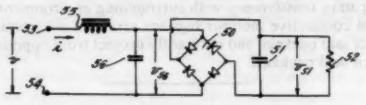
second circuit means responsive to the alternating input signal being applied thereto for causing said peak magnitude of said output signal from said first circuit means to be varied proportionately with variations in the frequency of the applied alternating input signal such that said peak magnitude is representative of the frequency of the input signal.

4,222,096

D-C POWER SUPPLY CIRCUIT WITH HIGH POWER FACTOR

Dennis Capewell, Easton, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 5, 1978, Ser. No. 966,603
Int. Cl.² H02M 1/12
U.S. Cl. 363—44 23 Claims



1. A high power factor power supply circuit comprising, in combination:

an a-c supply circuit having a relatively low a-c frequency;

a tuned circuit comprising an inductor and capacitor having respective values which are tuned to resonate at a frequency which is higher by less than about one order of magnitude than said relatively low a-c frequency;

coupling means for connecting said a-c supply circuit to said tuned circuit;

a rectifier means having a-c input means connected to said tuned circuit and having a d-c output circuit means; said inductor being connected in series with said rectifier means; said capacitor being connected in shunt with said rectifier means and having one terminal connected to the junction between said inductor and said rectifier means;

and an output capacitor connected to said d-c output circuit means.

4,222,097

CONTROL OF HIGH-VOLTAGE D.C. TRANSMISSION SYSTEMS

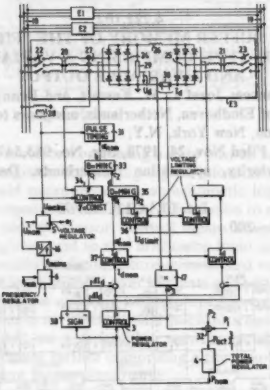
York Rogowsky, Berlin, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,050

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2747136

Int. Cl.² H02M 7/00

U.S. Cl. 363—51 **5 Claims**



1. In a control apparatus for a high-voltage D.C. transmission system connecting three-phase current systems having respectively different frequencies, the apparatus including at least two units connected to operate in parallel during normal operation and each composed of a rectifier group and an inverter group, and means permitting one of the units to operate with its energy direction reversed in unusual situations, the improvement comprising: an individual power regulator for each said unit connected to receive a desired power signal indicating the magnitude and direction of power transmission by said unit; a common regulator connected to all of said power regulators for supplying thereto, in normal operation, the desired power signal based on the total power for all of said units; a voltage regulator for the three-phase voltage of one of the lines associated with said one unit and providing a signal representative of the magnitude of that voltage; and means switching the control of said regulator for said one unit from said common regulator to said voltage regulator, upon occurrence of an unusual situation, to cause reversed energy direction operation to occur at an energy level proportional to the value of the signal provided by said voltage regulator.

4,222,098

BASE DRIVE FOR PARALLELED INVERTER SYSTEMS

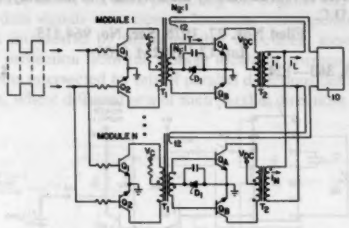
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Satoshi Nagano, Long Beach, Calif.

Filed Feb. 16, 1978, Ser. No. 878,541

Int. Cl.² H02H 7/122

U.S. Cl. 363—71 **5 Claims**

1. In an inverter system having a plurality of inverter modules connected in parallel to a load for inverting power from a source through power transistors under control of a clock input signal, the improvement comprised of a positive feedback current derived from the total current to the load from all of the modules of the inverter system and applied to the base drive of each of the power transistors of all modules thereby



providing all modules protection against open or short circuit faults occuring in any of the modules.

4,222,099

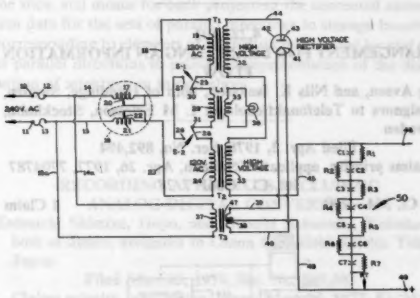
POWER SUPPLY

James J. Hill, North Miami, Fla., assignor to Medi-Technical Corporation, Miami, Fla.

Filed Oct. 12, 1978, Ser. No. 950,738

Int. Cl.² H02M 7/00

U.S. Cl. 363—101 **4 Claims**



1. In a D.C. power supply having a pair of input lines for connection across an A.C. power source:

a first step-up transformer having a primary winding operatively connected to one of said input lines and having a first separate secondary winding inductively coupled to said primary winding;

a second step-up transformer having a primary winding operatively connected to the other of said input lines and having a second separate secondary winding inductively coupled to said lastmentioned primary winding;

switch means for connecting said primary windings in series with each other across said input lines;

rectifier means operatively connected across said secondary windings to rectify the current induced therein;

filter means operatively connected to said rectifier means to smooth fluctuations of the rectified current;

and at least one additional step-down transformer having a primary winding and a third separate secondary winding inductively coupled thereto, and a load connected across said last-mentioned secondary winding;

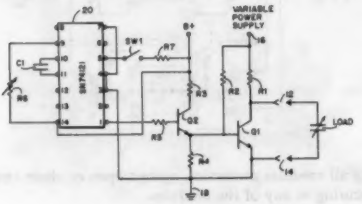
said switch means being selectively adjustable to connect the primary winding of said additional transformer in series with the primary windings of said first and second transformers across said input lines, whereby to reduce the voltage applied to the primary windings of said first and second transformers and thus reduce the rectified output voltage.

4,222,100

POWER TRANSITION CIRCUIT

Billy E. Jones, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Wasington, D.C.

Filed Nov. 27, 1978, Ser. No. 964,115
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—124 **4 Claims**



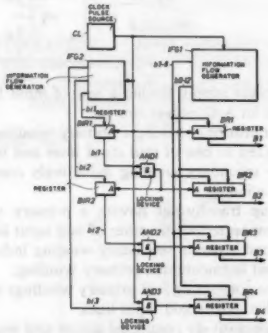
1. A power transition circuit comprising: switching means for providing output pulses of electrical energy, driving means for gating said switching means on and off; and timing means for providing a controllable pulse width signal to said driving means for controlling the period of operation of said switching means, said timing means being adapted to receive input pulses of voltage for initiating said pulse width signal.

4,222,101

ARRANGEMENT FOR BRANCHING AN INFORMATION FLOW

Oleg Avsan, and Nils K. Isaksson, both of Huddinge, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 3, 1978, Ser. No. 892,494
Claims priority, application Sweden, Apr. 26, 1977, 7704787
Int. Cl.[2] G06F *7/28*
U.S. Cl. 364—200 **1 Claim**



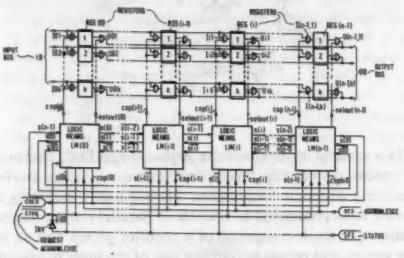
1. Information processing apparatus comprising: a source of clock pulses; source means for generating a flow of digital information words and a flow of pluralities of digital braching bits, the flow being synchronized with the clock pulses; a plurality of information word registering means connected to said source means for receiving at least parts of the digital information words therefrom in response to the clock pulses; a plurality of clock pulse synchronized locking means coupled to the plurality of information word registering means, each of said locking means receiving the branching bits and generates an enabling signal for controlling the receipt of said at least parts of the digital information words by an associated information word registering means; a first branching bit registering means connected to said source means for receiving branching bits therefrom, in response to clock pulses, and connected to the associated locking means for emitting thereto the pluralities of digital branching bits for controlling the associated information word registering means to receive the digital information words; and a second branching bit registering means connected to said source means for receiving branching bits therefrom, in response to said enabling signals other than the clock pulse, and connected to the associated locking means for emitting thereto the pluralities of digital branching bits.

4,222,102

DATA BUFFER MEMORY OF THE "FIRST-IN, FIRST-OUT" TYPE, COMPRISING A VARIABLE INPUT AND A VARIABLE OUTPUT

Pierre G. Jansen; Jozef L. W. Kessels, and Benny L. A. Waumans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,547
Claims priority, application Netherlands, Dec. 12, 1977, 7713706
Int. Cl.[2] G11C *13/00*
U.S. Cl. 364—200 **8 Claims**



1. A data buffer memory of the "first-in, first-out" type, having logic means for ensuring that an input for data to be written is situated as near as possible to an output for data to be read, depending on the filling of the buffer, thus forming an uninterrupted content of the buffer, furthermore having an input bus for transporting data to an input of a register of said buffer assigned for this purpose, and an output bus by which data are read from a register of said buffer assigned for this purpose, said logic means being provided for each section of the buffer having n registers (0, 1, . . . n−1), said logic means further comprising:

first logic means for detecting a condition that a register (i) is empty and that the next register (i+1) is full, which detector condition is for controlling selection means to select (cop(i)) register (i) in which, furthermore controlled by a request signal (creq) from outside the buffer, data are taken up from the input bus;

second logic means for generating, on the basis of the longest filled state of a register (i), a signal (selout (i)) for the selection of that register (i) from which data are taken up by the output bus;

further logic means being provided for updating a status indication for register (i) determined by said signal and an acknowledge signal (ers) applied from outside the buffer indicating that the register (i) becomes empty;

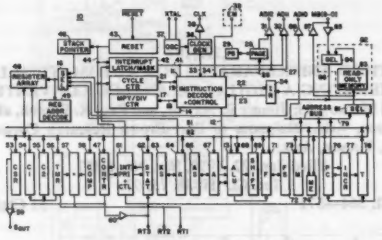
third logic means generating a signal (e) indicating that all registers are empty (no signal cop (i) being generatable), said signal through still further logic means selecting a register (j).

4,222,103

REAL TIME CAPTURE REGISTERS FOR DATA PROCESSOR

George P. Chamberlin, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 25, 1978, Ser. No. 945,737
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 **13 Claims**



1. A microprocessor comprising a data bus, an address bus, a plurality of registers for storing digital information to effect operation of said microprocessor, an arithmetic logic unit for performing computations on digital information to effect operation of said microprocessor, control means coupled to said plurality of registers and to said arithmetic logic unit for controlling the transfer of digital information in said registers and said arithmetic logic unit and over said data and address busses, a plurality of pins for coupling said microprocessor to a power supply and to external devices, said microprocessor being an integrated circuit on a monolithic semiconductor substrate, said microprocessor further comprising a time capture means, said time capture means comprising:

(a) timer means responsive to a source of successive clock signals, said timer means providing a first digital output signal representative of time,

(b) means for detecting an occurrence of a trigger signal received at a predetermined one of said microprocessor pins

(c) at least one storage means for storing digital information and having first input means and output means, said first input means being coupled to said timer means and responsive to said detection means for storing in said at least one storage means said first digital output signal upon the occurrence of said trigger signal, said output means providing a second digital output signal representative of the digital information stored in said at least one storage means.

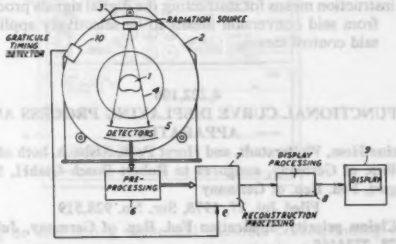
4,222,104

RADIOGRAPHY

John F. Moore, Lake Bluff, Ill., assignor to E M I Limited, Hayes, England

Filed Nov. 2, 1978, Ser. No. 957,101
Int. Cl.² A61B *6/02*; G06F *15/52*
U.S. Cl. 364—414 **7 Claims**

7. Apparatus for examining a body slice by means of penetrating radiation such as x-radiation, the apparatus including a scanning arrangement having means for projecting the radiation through the body slice and means for detecting the intensity of the radiation after passage through the body and for providing sets of data signals where each set represents the attenuation of the radiation along individual directions which are at different angles with respect to the body within a fan-shaped distribution of directions and different sets represent the attenuation of the radiation along such individual directions within fan-shaped distributins which are at different mean angles relative to the body; means for modifying the data signals by combination with other data signals of the same set; means for interpolating between the modified data signals to provide data signals relating to a larger number of directions angularly spaced in the respective fan-shaped distribution; storage means having a plurality of storage locations corresponding to elements of a matrix of elements notionally defined in said slice; means for back projecting the original and interpolated data signals onto storage locations corresponding to elements intersected by the respective directions; means for forward projection from the storage locations corresponding to elements intersected by sets of parallel directions defined in said slice, where different sets of such parallel directions are at



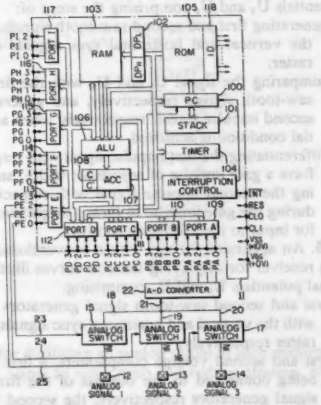
different angles relative to the body, to provide attenuation data for those parallel directions; means for correcting the attenuation data for the sets of parallel directions for errors relating to the distribution of attenuation in different parts of the slice; and means for back projecting the corrected attenuation data for the sets of parallel directions to storage locations corresponding to elements of the matrix intersected by said sets of parallel directions to provide a representation of the distribution of attentuation in said slice.

4,222,105

RECORDING APPARATUS INCLUDING ANALOG-DIGITAL CONVERTER

Katsuichi Shimizu, Hoyo, and Hisashi Sakamaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,403
Claims priority, application Japan, Mar. 28, 1977, 52/34123
Int. Cl.² G06F *15/20*; G03G *15/00*
U.S. Cl. 364—518 **11 Claims**



10. Recording apparatus having an analog-digital converter comprising:

recording means for recording information;

control means for controlling the operation of said recording means;

light emitting means for projecting light onto a light-illuminated member;

sensing means for sensing the amount of light obtained from the member illuminated by said light emitting means to produce analog signals associated with the amount of light sensed;

analog-digital conversion means for converting the analog signals produced from said sensing means into digital signals; and

instruction means for instructing the digital signals produced from said conversion means to be selectively applied to said control means.

4,222,106

FUNCTIONAL CURVE DISPLAYING PROCESS AND APPARATUS

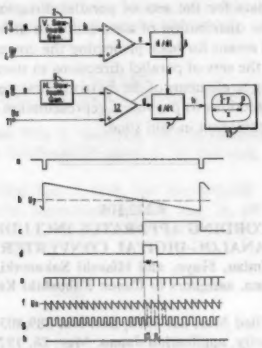
Heinz Hess, Weiterstadt, and Horst Peth, Alsbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,519

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734465

Int. Cl.³ H04N *9/62*; H07N *7/18*; G06K *15/20*

U.S. Cl. 364—521 **16 Claims**



10. A process for displaying, on the screen of a conventional home television receiver, curves illustrating analog signal potentials U_x and U_y comprising the steps of:

generating first and second saw-tooth signals in response to the vertical and horizontal sync signals of the picture raster,

comparing the signal U_y and U_x with the first and second saw-tooth signals respectively, and generating first and second impulse signals respectively when an equal potential condition is achieved,

differentiating the first impulse signal with respect to time to form a gate impulse of adjustable width, and differentiating the second impulse signal with respect to time only during the gate impulse to form a brightness control pulse for input to the television receiver.

15. An apparatus for use with a conventional home television receiver for displaying thereon curves illustrating analog signal potentials U_y and U_x comprising:

first and second saw-tooth signal generators synchronized with the vertical and horizontal sync signals of the picture raster respectively,

first and second voltage comparaters, a first input at each being connected to the outputs of the first and second signal generators respectively, the second input of each receiving analog potentials U_y and U_x respectively,

first and second differentiating means for respectively differentiating the output of the first and second voltage comparaters with respect to time, the output of the first differentiating means connected to a gate on the second differentiating means to thereby control the operation thereof, the output of the second differentiating means comprising a brightness control pulse signal for input to the television receiver.

4,222,107

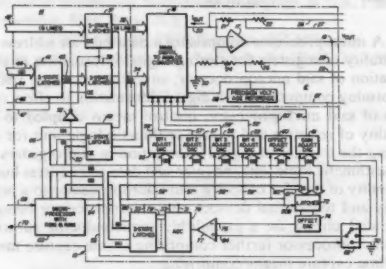
METHOD AND APPARATUS FOR AUTOMATICALLY CALIBRATING A DIGITAL TO ANALOG CONVERTER

Andrij Mrozowski; Jimmy R. Naylor, and Paul R. Prazak, all of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Jan. 22, 1979, Ser. No. 5,357

Int. Cl.³ H03K *13/02*

U.S. Cl. 364—571 **31 Claims**



1. A method for calibrating a first signal to analog converter, said first digital to analog converter including a plurality of digital inputs and an output terminal for producing an analog output signal, said method comprising the steps of:

a. applying a first pattern of logic signals to the inputs of the first digital to analog converter, said first digital to analog converter producing a first output signal at said output terminal in response to said first pattern;

b. performing a digital to analog conversion of a predetermined group of said logic signals of said first pattern to produce a first offset signal;

c. comparing said first offset signal to a first reference signal and producing a first difference signal representative of the difference between said first offset signal and said first reference signal;

d. performing an analog to digital conversion of said first difference signal to produce a first digital word;

e. storing said first digital word;

f. comparing said first offset signal to said first output signal to produce a second difference signal representative of the difference between said first offset signal and said first output signal;

g. performing an analog to digital conversion of said difference signal to produce a second digital word;

h. comparing said first and second digital words to produce a first comparison word;

i. obtaining a first correction word by utilizing said first comparison word to produce said first correction word from stored correction information which characterizes said first digital to analog converter;

j. performing a digital to analog conversion of said first correction word to produce a first correction signal; and

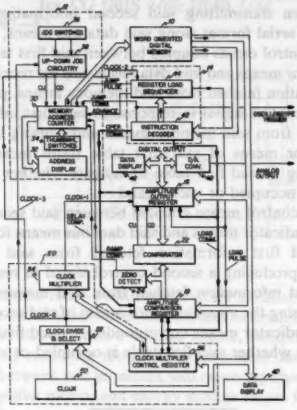
k. adjusting the output signal of said first digital to analog converter in response to said first correction signal to reduce any initial difference between said first output signal and said first reference signal.

4,222,108

DIGITALLY-PROGRAMMED ARBITRARY WAVEFORM GENERATOR

Norman J. Braaten, 2105 King Rd., Eagan, Minn. 55122

Filed Dec. 1, 1978, Ser. No. 965,235
Int. Cl.[2] G06J 1/00; G06F 15/34
U.S. Cl. 364—608 30 Claims



1. Apparatus for generating waveforms, the apparatus comprising:

variable clock means for providing pulses at a rate determined by digital data loaded into the variable clock means;

amplitude output means for containing an output count;

amplitude comparison register means for containing an end point count;

word oriented digital memory means for storing a plurality of digital words containing instructions and data;

memory address means for addressing digital words in the word oriented digital memory means in a predetermined order;

instruction execution means for executing the instruction contained in each digital word addressed by the memory address means, the instructions executed by the instruction execution means including a first load instruction for loading the data from a digital word into the amplitude comparison register means, a second load instruction for loading the data from a digital word into the variable clock means, and a ramp instruction for enabling the amplitude output means to count toward the end point count contained in the amplitude comparison register means in response to pulses from the variable clock means; and

comparator means for comparing the output count contained in the amplitude output means and the end point count contained in the amplitude comparison register means during a ramp operation and producing a ramp complete signal when the output count equals the end point count, the ramp complete signal indicating to the memory address means that the ramp operation is complete.

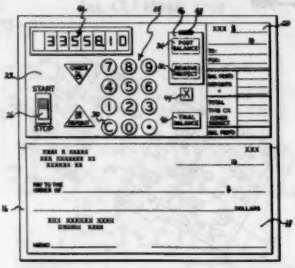
4,222,109

ELECTRONIC CHECKBOOK

John T. Siwula, 145 Sanford Dr., Jamestown, N.Y. 14701

Filed Jun. 5, 1978, Ser. No. 912,925
Int. Cl.[2] G06F 15/30
U.S. Cl. 364—715 10 Claims

1. An electronic checkbook for storing the checking balance for later reference and then recalling, displaying, and further adding to or subtracting from the balance comprising a microprocessor having a memory for storing the checking balance, said microprocessor including means for recalling the stored balance from said memory upon start, means connected to said means for recalling for displaying the recalled balance digitally, said microprocessor further including means connected to said means for recalling for affecting the recalled balance in a manner not altering the balance stored in said memory by



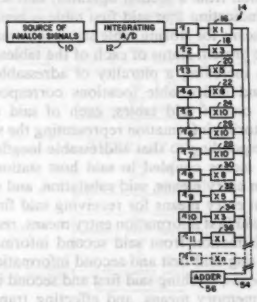
adding or subtracting numerical amounts corresponding to deposits or checks and connected to said display means for causing said display means to display the affected balance for error avoidance or approval, and means connected to said memory and to said means for affecting for causing said memory to store the affected balance as the new balance.

4,222,110

ANALOG TO DIGITAL CONVERTER SYSTEM

Neil H. K. Judell, North Kingston, R.I., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,249
Int. Cl.[2] G06F 15/34; H03K 13/02
U.S. Cl. 364—724 6 Claims



1. A system for digitizing an analog signal in such manner as to increase the signal to noise ratio and reduce aliasing, comprising

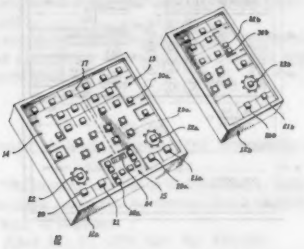
a continuously integrating A/D converter, and

a digital filter coupled to the output of said converter, said digital filter having more than two sections and a gain greater than two.

4,222,111
METHOD AND APPARATUS FOR MONITORING STATUS OF TABLES IN A RESTAURANT

John W. Sloan, and Frank E. Bumb, Jr., both of Phoenix, Ariz., assignors to Sherwood Johnston, Phoenix, Ariz.

Filed Dec. 19, 1977, Ser. No. 861,648
Int. Cl.[2] G06F 3/02
U.S. Cl. 364—900 18 Claims



1. A table status system for displaying present status of each of a plurality of tables in a restaurant, each table being capable of having a status of being vacant, being occupied by patrons of the restaurant, or being bussed, the tables being organized in at least first and second groups, said table status system comprising in combination:

a. a host station, said host station including

i. first table status indicator means for indicating the present status of each of the plurality of tables, said first table status indicator means including a plurality of visual indicator means, each corresponding to a respective table, for visually indicating the present status of that table,

ii. first information entry means for receiving first information from a first operator, said first information indicating that a first table in the first group is occupied or vacant;

b. at least one substation, said substation including

i. second table status indicator means for indicating the present status of each of the tables in the first group, said second table status indicator means including a plurality of visual indicator means, each corresponding to a respective table of the first group, for visually indicating the present status of that table,

ii. second information entry means for receiving second information from a second operator, said second information indicating that said first table is being bussed;

c. memory means for storing table status information representing the present status of each of the tables, said memory means including a plurality of adressable locations, each of said addressable locations corresponding to a respective one of said tables, each of said addressable locations storing information representing the status of the table corresponding to that addressable location;

d. processor means coupled to said host station, said first information entry means, said substation, and said second information entry means for receiving said first information from said first information entry means, receiving said second information from said second information entry means, writing said first and second information into said memory means, fetching said first and second information from said memory means, and effecting transmitting of said fetched first and second information to said host station and said substation;

e. data bus means coupled to said processor means, said host station and said substation for bidirectionally conducting said first information in serial form between said processor means and said host station and bidirectionally conducting said second information between said processor means and said substation;

f. first formatting means coupled between said data bus means and said first information entry means for converting said first information into a first serial format and then transmitting said first information in said first serial format along said data bus means;

g. second formatting means coupled between said data bus means and said second information entry means for converting said second information into a second serial format and then transmitting said second information in said second serial format along said data bus means;

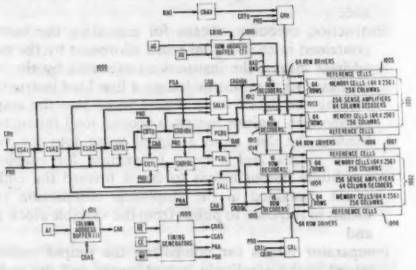
h. first control means coupled between said first table status indicator means and said data bus means for receiving first information fetched from said memory means, producing a first control signal in response to said first information fetched from said memory means and causing the visual indicator means of said first table status means corresponding to said first table to indicate whether said first table is occupied or vacant; and

i. second control means coupled between said second table status indicator means and said data bus means for receiving said first information fetched from said memory means, producing a second control signal in response to said first information fetched from said memory means and causing the visual indicator means of said second table status indicator means corresponding to said first table to indicate whether said first table is occupied or vacant.

4,222,112
DYNAMIC RAM ORGANIZATION FOR REDUCING PEAK CURRENT

Donald G. Clemons, Walnutport, and Frank J. Procyk, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,741
Int. Cl.[2] G11C 7/02
U.S. Cl. 365—189 8 Claims



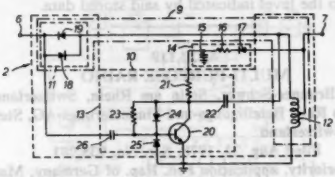
1. A semiconductor memory device comprising a multiplicity of memory cells arranged in an ordered array of rows and columns, the array being divided into a plurality of sub-arrays, each sub-array having associated row and column decoder means responsive to an address for selecting, respectively, a row and a column in the associated sub-array, a plurality of sense/refresh amplifier means a different one associated with each column in each sub-array for sensing and/or refreshing the contents of each cell situated along a selected row,

characterized in that there are included means responsive to a part of the address for selecting a sub-array, and means for activating after row selection the sense/refresh amplifier means in each sub-array in sequence beginning in the selected sub-array, the period between successive activations being sufficient for the latching current peak caused by a prior activation to subside.

4,222,113
TRANSMIT-RECEIVE SWITCHING UNIT

Henning M. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Dec. 6, 1978, Ser. No. 966,889
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755619
Int. Cl.[2] G01S 9/66; H04B 1/44
U.S. Cl. 367—87 5 Claims

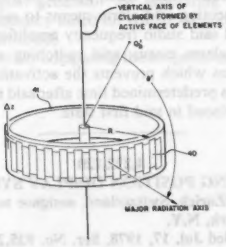


1. A transmit/receive switching unit for installation between a transmit/receive converter and a transmission line of a transmit/receive device with a voltage source, comprising, transmitting and receiving terminals, transmission and receiving channels between said terminals, said receiving channel having signal amplifier means, and energy storage means for storing a part of the transmission energy of transmitting signals for operating said amplifier means.

4,222,114
CYLINDRICAL ARRAY RADIATOR

Richard L. Rolleigh, Conway, Ark.; James G. Pruitt, Autsin, and Robert H. Stokes, Leander, both of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1977, Ser. No. 763,173
Int. Cl.[2] G01S 9/68; H04R 17/00
U.S. Cl. 367—153 3 Claims

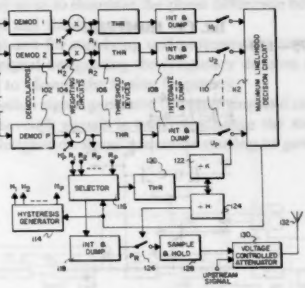


1. A cylindrical array radiator comprising:
a cylindrical housing; and
a plurality of staves arranged vertically adjacent each other on the circumference of said cylindrical housing to form an active aperture in the form of a sector of a cylinder, each of said staves being staggered alternately in a vertical direction from each adjacent stave by an amount necessary to eliminate undesirable side lobes.

4,222,115
SPREAD SPECTRUM APPARATUS FOR CELLULAR MOBILE COMMUNICATION SYSTEMS

George R. Cooper, and Raymond W. Nettleton, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Mar. 13, 1978, Ser. No. 886,099
Int. Cl.[2] H04K 1/04
U.S. Cl. 375—1 20 Claims

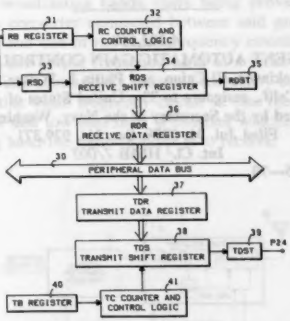


20. A method for forming a signal set for a spread spectrum communication system, said method comprising:
generating algorithmically a small set of long-duration time-frequency coded signals to form a basic signal set;
dividing the formed basic signal set into a plurality of shorter signals retaining the same properties of the basic signal set to define a channel; and
modulating message data on each channel by differential biphase modulation at a rate determined by orthogonal sequences of message information.

4,222,116
DIGITAL LOGIC FOR SEPARATING DATA AND CLOCK IN MANCHESTER-ENCODED DATA

Stanley E. Groves, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1978, Ser. No. 939,744
Int. Cl.[3] H04L 7/02
U.S. Cl. 375—55 4 Claims



1. A digital circuit for separating data and clock signals in a Manchester-encoded data stream having an embedded clock frequency f, said digital circuit comprising:
means for providing an additional clock of frequency Nf, where N is a positive integer greater than 2,
digital logic means including a first shift register responsive to said data stream and to said additional clock for generating at least one control clock, and
a second shift register responsive to said data stream and to

said at least one control clock for separating the data and embedded clock in said data stream.

4,222,117

DATA PULSE RECEIVER ARRANGEMENT

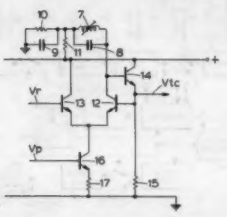
Richard E. F. Bugg, Croydon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1978, Ser. No. 945,063

Claims priority, application United Kingdom, May 30, 1978, 40034/77

Int. Cl.[2] H04L *7/02*

U.S. Cl. 375—110 **2 Claims**



1. A data pulse receiver arrangement for the acquisition of data pulses which occur in a serial bit stream in a received information signal in which one level of the signal represents a binary value '1' and another level of the signal represents a binary value '0', said arrangement including a data pulse clock generator in the form of a ringing circuit which comprises a tuned circuit arranged for oscillation at a predetermined clock pulse frequency and voltage-to-current convertor means responsive to voltage input pulses derived from received data pulses to produce current pulses for exciting the tuned circuit to maintain its oscillation, which data pulse receiver arrangement is characterized in that said ringing circuit further comprises comparator means for comparing the voltage produced across the tuned circuit with a reference voltage, and switching means responsive to an output received from the comparator means when the voltage across the tuned circuit exceeds the reference voltage to interrupt the current pulses to the tuned circuit until said output from the comparator has been terminated due to oscillation damping of the tuned circuit reducing the voltage across it to below the reference voltage again.

4,222,118

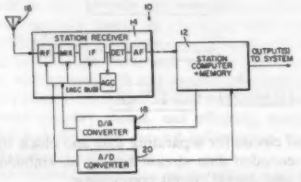
INTELLIGENT AUTOMATIC GAIN CONTROL CIRCUIT

John D. Dickinson, El Cajon, and Philip L. Writer, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,371

Int. Cl.[3] H04B *7/005*

U.S. Cl. 455—70 **10 Claims**



5. In a computer-to-computer data transmission system including a first location transmitter and receiver operably coupled to a computer at said first location, said computer having a memory associated therewith, and further including at least one other remote location transmitter and receiver operably coupled to a computer at said remote location, said first location receiver including an automatic gain control circuit, the method of controlling the gain of said first location receiver comprising the steps of:

(a) storing in said memory at said first location for each said remote transmitter data indicative of the gain required for reception by said first location receiver of a signal from each said remote transmitter; and

(b) prior to each transmission from any said remote transmitter, adjusting the gain of said automatic gain control circuit to the level indicated by said stored data.

4,222,119

MULTI-PURPOSE RADIO

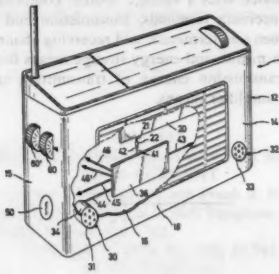
Hermann Brunner-Schwer, Stein am Rhein, Switzerland, assignor to Rhen Beteiligungs-und Finanzierungs-AG, Stein am Rhein, Switzerland

Filed Aug. 22, 1978, Ser. No. 935,981

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810500

Int. Cl.[2] H04B *1/16, 11/00*

U.S. Cl. 455—140 **13 Claims**



1. A combined radio receiver and alarm comprising

a radio cabinet,

power supply means within said cabinet

radio receiver means with said cabinet, said radio receiver means including audio frequency amplifier means and loudspeaker means connected to said audio frequency amplifier means,

alarm means including an ultrasonic transmitter and ultrasonic receiver means, located entirely within said cabinet, and

switching means which when placed in a first state electrically connecting said alarm means to said power supply means and said audio frequency amplifier means to activate said alarm means, said switching means including delay means which prevents the activation of said alarm means for a predetermined time after said switching means has been placed in said first state.

4,222,120

TUNING POSITION DISPLAY SYSTEM

Johann Lusch, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,242

Claims priority, application United Kingdom, Aug. 8, 1977, 33212/77

Int. Cl.[3] H04B *1/06*

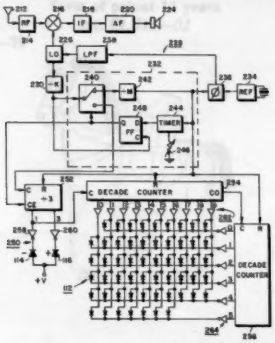
U.S. Cl. 455—154 **9 Claims**

1. Apparatus comprising:

tuner means for generating a local oscillator signal appropriate for sequentially tuning any one of a plurality of stations having successively higher frequencies;

first means including a plurality of individual station indica-

tor means for indicating when respective predetermined ones of said stations in respective predetermined groups of stations are tuned, said indicator means being arranged in a linear array according to a numerical order of said stations corresponding to the order of the frequencies of said stations along a scale with respective identifying indices so



that as stations in said respective groups are sequentially tuned said respective indicator means are sequentially activated; and

second means including at least one position indicator means for indicating the frequency of a tuned station relative to the frequency of the respective predetermined station within said respective predetermined group.

4,222,121

FREQUENCY SYNTHESIZER TYPE RECEIVER HAVING A CHANNEL SELECTION DEVICE

Takehiko Matsumoto, and Hiroshi Haba, both of Sagamihara, Japan, assignors to Sanshin Electric Co., Ltd., Yokohama, Japan

Filed Nov. 6, 1978, Ser. No. 957,676

Claims priority, application Japan, Feb. 28, 1978, 53/22190

Int. Cl.[2] H04B 1/34

U.S. Cl. 455—164 **7 Claims**

1. A frequency synthesizer type radio receiver comprising:

a tuner circuit including a local oscillator for generating a first signal having a frequency corresponding to a tuning frequency;

a programable divider for dividing the frequency of the first signal from said tuner circuit into a second signal with a predetermined frequency division ratio N;

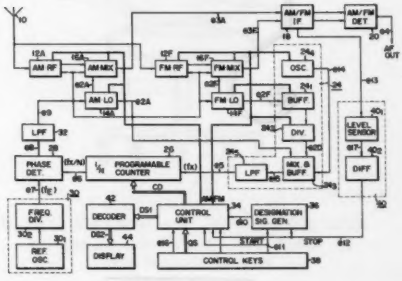
a reference signal generator for generating a third signal having a frequency based on which the tuning frequency is to be determined;

a phase detector for comparing the frequencies and phases of the second and third signals respectively from said programable divider and said reference signal generator, thereby generating a fourth signal representing the frequency difference and phase difference between the second and third signals;

a low pass filter for removing a ripple component from the fourth signal from the phase detector, thereby generating a fifth signal corresponding to the DC somponent of the fourth signal, said fifth signal controlling the tuning frequency so as to minimize the phase difference between the second and third signals;

a control unit for supplying said programable divider with a sixth signal designating the frequency division ratio N in order to change the tuning frequency;

a designation signal generator for supplying said control unit with seventh signals in order to change the sixth signal, said designation signal generator starting to generate sev-



enth signals upon receipt of a start signal and stopping the generation of seventh signals upon receipt of a stop signal;

a tuning sensor for sensing the carrier component of a radio wave from a broadcasting station caught by said tuner circuit, whereby supplying the stop signal to said designation signal generator;

a start switch means for supplying the start signal to the designation signal generator; and

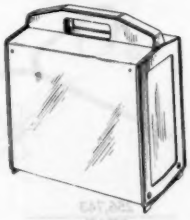
said tuner circuit including at least two radio frequency circuits for enabling the radio receiver to receive a plurality of broadcasting bands, there being provided a frequency converter connected between said programable divider and one of the radio frequency circuits for converting the output frequency band of a radio frequency circuit into substantially the same frequency band as that of another radio frequency circuit so that the time constant of said low pass filter is constant whichever broadcasting band the radio receiver is to receive.

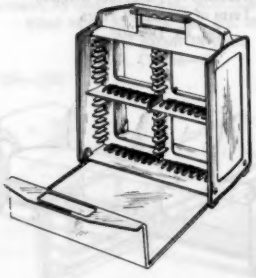
DESIGNS

SEPTEMBER 9, 1980

256,736
COSTUME OR THE LIKE
Leonard C. Bajork, 810 Clyman St., Watertown, Wis. 53094
Filed Sep. 2, 1977, Ser. No. 830,357
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—79

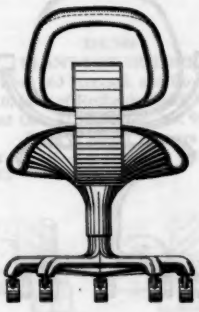
256,737
CARRYING CASE FOR TAPE CASSETTES
Michael B. Woodhall, Maidenhead, England, assignor to Cambra International Ltd., London, England
Filed Apr. 7, 1978, Ser. No. 894,471
Claims priority, application United Kingdom, Dec. 14, 1977, 982605/77
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D3—35





256,738
PURSE HOLDING HOOK
Florinda A. Dockery, 310 W. Vineyard, Oxnard, Calif. 93030
Filed Oct. 6, 1978, Ser. No. 949,383
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—54

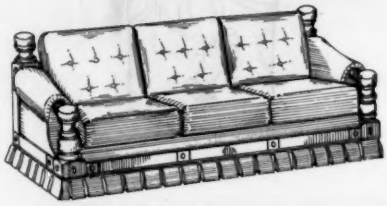
256,739
OFFICE CHAIR
Hugh C. Acton, Augusta, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Sep. 22, 1977, Ser. No. 835,672
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



256,740
OFFICE CHAIR
Hugh C. Acton, Augusta, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Sep. 22, 1977, Ser. No. 835,673
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

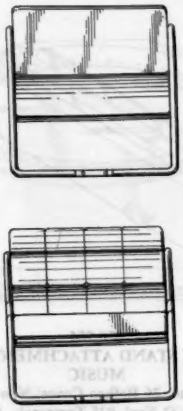
256,741
OFFICE CHAIR
Hugh C. Acton, Augusta, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Sep. 22, 1977, Ser. No. 835,845
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

256,742
SEAT
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 5, 1977, Ser. No. 857,721
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



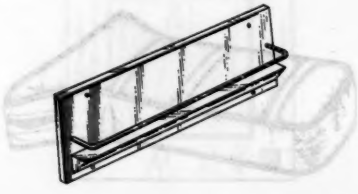
256,743
SEAT
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 8, 1977, Ser. No. 858,583
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

256,744
CHAIR
Irving L. Mark, 1814 D Norwood, Chicago, Ill. 60660
Filed Nov. 25, 1977, Ser. No. 854,999
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69

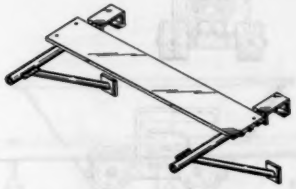


256,745
SOAP HOLDER
Earl S. Figuered, 1147 Wanamaker Dr., Covina, Calif. 91724
Filed Oct. 22, 1979, Ser. No. 86,756
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90

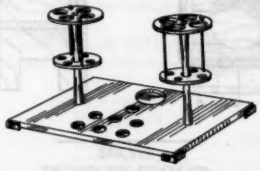
256,746
SHELF FOR STORAGE OF SOFT CONTACT LENS VIALS
Penny Loveson, 55 Glen Eyrie Ave., #29, San Jose, Calif. 95152
Filed Mar. 24, 1978, Ser. No. 890,086
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



256,747
HIBACHI STAND
Edward M. Stephen, 10700 Rosebrook Rd., Richmond, British Columbia, Canada (V7A 2R7)
Filed Jul. 30, 1979, Ser. No. 61,935
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—132

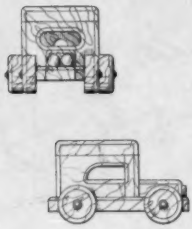


256,748
TABLE TOP HOME BAR
Jack R. Smith, 630 Thornton St., Hammond, Ind. 46320
Filed Jun. 28, 1978, Ser. No. 920,016
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

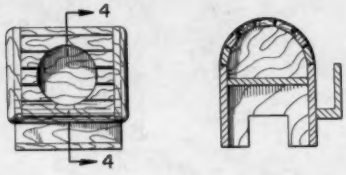


256,749
PLANT POT HOLDER
Donald R. Crawford, 863 Hartzell, and Roy L. Crawford, 1255 E. Citrus #110, both of Redlands, Calif. 92373
Filed Oct. 12, 1978, Ser. No. 950,701
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02;* D21—*01*
U.S. Cl. D6—152

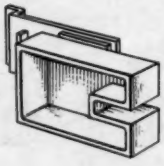
256,750
PLANT POT HOLDER
Donald R. Crawford, 863 Hartzell, and Roy L. Crawford, 1255 E. Citrus #110, both of Redlands, Calif. 92373
Filed Oct. 12, 1978, Ser. No. 950,699
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02;* D21—*01*
U.S. Cl. D6—153



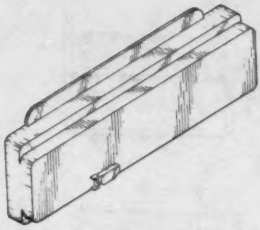
256,751
PLANT POT HOLDER
Donald R. Crawford, 863 Hartzell, and Roy L. Crawford, 1255 E. Citrus #110, both of Redlands, Calif. 92373
Filed Oct. 12, 1978, Ser. No. 950,700
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02;* D21—*01;* D31—*00*
U.S. Cl. D6—153



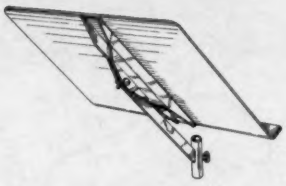
256,752
RETRACTABLE BEARING DEVICE FOR SUPPORTING A DRAWER UPON A DRAWER GUIDE
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,953
Claims priority, application United Kingdom, Jul. 23, 1977, 980871/77
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



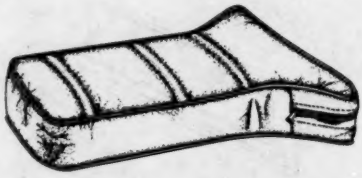
256,753
COMBINED DRAWER GUIDE AND STOP UNIT
James G. Shook, Goldsboro, N.C., assignor to Kemp Furniture Industries, Inc.
Filed Apr. 25, 1978, Ser. No. 899,877
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



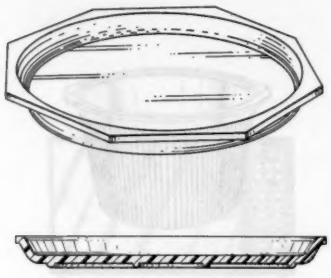
256,754
MICROPHONE STAND ATTACHMENT FOR SHEET MUSIC
Richard J. LoJacono, 26 Balboa Coves, Newport Beach, Calif. 92663, and James D. Seal, 825 Tamarack, Apt. 3, Brea, Calif. 92621
Filed Nov. 24, 1978, Ser. No. 963,517
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



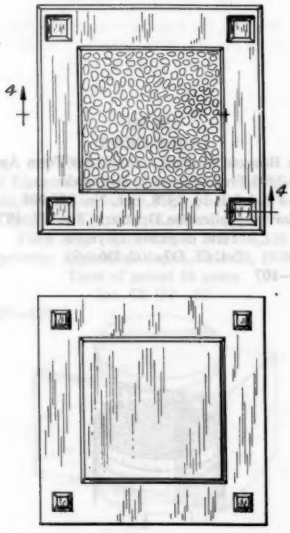
256,755
AUTOMOBILE CENTER CONSOLE CUSHION
Charles W. Pelton, 2466 Sunset Ter., Union Lake, Mich. 48085
Filed Oct. 25, 1977, Ser. No. 845,143
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



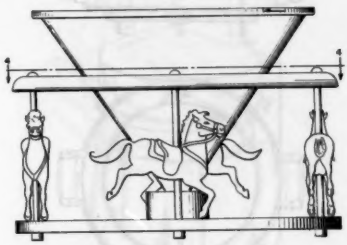
256,756
PLATE
David L. Painter, Glenview, Ill., and Robert C. Zinkgraf, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 8, 1979, Ser. No. 18,806
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—29



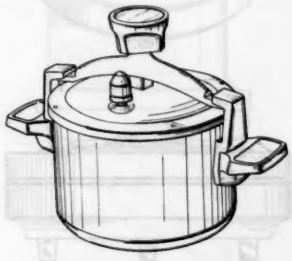
256,757
COASTER
Alwin J. Stahel, II, New Brighton, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Aug. 2, 1978, Ser. No. 930,544
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—45



256,758
POPCORN MAKER APPLIANCE
Robert F. Bowen, Burlington; Thomas J. Martel, North Reading, both of Mass., and Thomas H. D'Ovidio, Seabrook, N.H., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1978, Ser. No. 906,718
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



256,759
PRESSURE COOKER
Marshall B. Johnson, Chillicothe, Ohio, assignor to Wear-Ever Aluminum, Inc.
Filed Dec. 30, 1977, Ser. No. 866,408
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—86



256,760

ELECTRIC COOKER FOR PIZZA OR THE LIKE

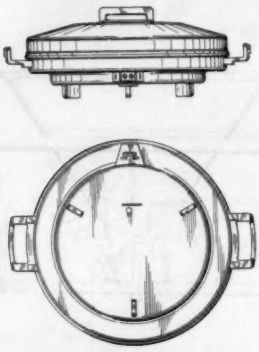
Joseph A. Rinaldi, Oradell, N.J., assignor to Rival Manufacturing Company

Filed May 23, 1978, Ser. No. 908,843

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—94



256,761

FOOD WARMING CABINET

Eric C. Martin, and Peter Ingledew, both of Cambridge, England, assignors to Pye (Electronic Products) Limited, Cambridge, England

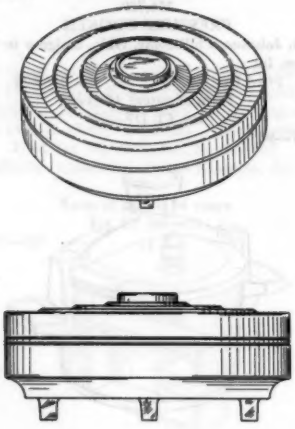
Filed Nov. 13, 1978, Ser. No. 960,429

Claims priority, application United Kingdom, May 15, 1978, 984601/78

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—94



256,762

CERAMIC COOKING AND SERVING VESSEL

Robert J. Scott, Blue Springs, Mo., assignor to Rival Manufacturing Company

Filed Aug. 9, 1976, Ser. No. 712,522

Term of patent 14 years

Int. Cl. D07—*01, 02*

U.S. Cl. D7—97

256,763

TABLE GRILL

Michel de la Bruyere Vincent, c/o Arreso Form Aps, 5, Havnevej, DK-3300 Frederiksvaerk, Denmark

Filed Jul. 26, 1978, Ser. No. 928,004

Claims priority, application Denmark, Jan. 27, 1978, 92/78

Term of patent 14 years

Int. Cl. D7—*02;* D6—*03*

U.S. Cl. D7—107

256,764

MICROWAVE OVEN

Donald G. Wolfe, Lake Barrington, and Joseph R. Mango, Midlothian, both of Ill., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 24, 1978, Ser. No. 909,551

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—128

256,765

MICROWAVE OVEN

Masamichi Yamamura, Osaka; Toshio Harada, Shin, and Hanji Takahashi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

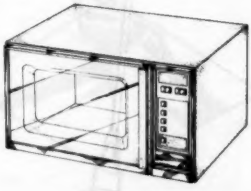
Filed Aug. 16, 1978, Ser. No. 934,329

Claims priority, application Japan, Feb. 20, 1978, 53/6238

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—128



256,766

FOOD PROCESSOR OR SIMILAR ARTICLE

Jacques H. J. Amiot, Alencon, France, assignor to Moulinex Societe Anonyme, Bagnolet, France

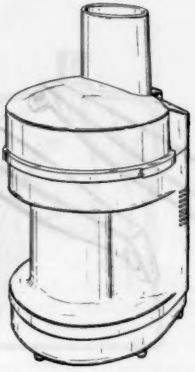
Filed Oct. 3, 1978, Ser. No. 948,763

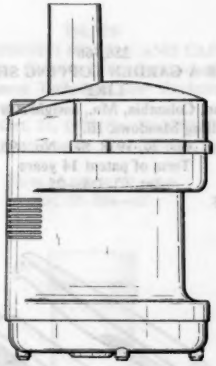
Claims priority, application France, Apr. 25, 1978, 78 41313

Term of patent 7 years

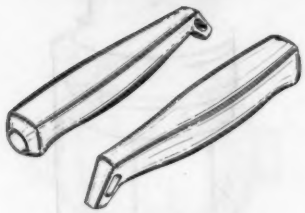
Int. Cl. D07—*04*

U.S. Cl. D7—153

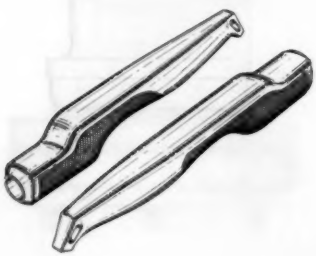




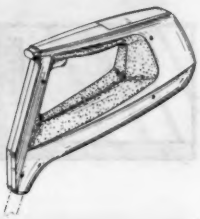
256,767
HANDLE FOR A GARDEN LOPPING SHEAR OR THE LIKE
Edward A. Irelan, Columbia, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Apr. 20, 1978, Ser. No. 898,403
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—01



256,768
HANDLE FOR A GARDEN LOPPING SHEAR OR THE LIKE
Edward A. Irelan, Columbia, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Apr. 20, 1978, Ser. No. 898,402
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—05



256,769
HANDLE FOR A CORDLESS ELECTRIC LAWN EDGER, TRIMMER OR SIMILAR ARTICLE
Edward A. Irelan, Columbia, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Apr. 20, 1978, Ser. No. 898,405
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08

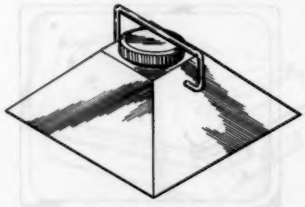


256,770
TRASH COMPACTOR
Marshall W. Broyles, 201 Lincoln Ave., Alexandria, Ind. 46001
Filed Jun. 12, 1978, Ser. No. 914,556
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

256,771
MOTOR DRILL
Ikuo Kitagawa, Iruma, and Katsuzo Ikeda, Hanno, both of, assignors to Olympic Fishing Tackles Co., Ltd., Saitama, Japan
Filed Jan. 30, 1978, Ser. No. 873,409
Claims priority, application Japan, Jul. 27, 1977, 52/29888
Term of patent 14 years
Int. Cl. D08—*01*
U.S. Cl. D8—68

256,772
FISHING ROD HOLDER UNIT
Ruth Helgren, Lot 20, Timberbrook Mobile Park, Bristol, Ind. 46507
Filed May 4, 1978, Ser. No. 902,994
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395

256,773
BOTTLE
Robert W. Harris, P.O. Box 935, Milledgeville, Ga. 31061
Filed Nov. 6, 1978, Ser. No. 958,344
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—46

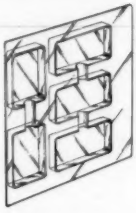


256,774
BOTTLE
Michel Bedin, Noisy le Roi, France, assignor to Parfums Guy LaRoche, Paris, France
Filed Dec. 19, 1977, Ser. No. 862,146
Claims priority, application France, Oct. 20, 1977, 77 76050
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

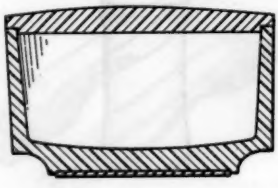
256,775
COMBINED BOTTLE AND CAP
Ferdinand Voitl, La Tour-de-Peilz, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Oct. 23, 1978, Ser. No. 953,979
Claims priority, application Switzerland, Apr. 24, 1978, 66820/78
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118

256,776
FUEL CONTAINER OR SIMILAR ARTICLE
Claude A. R. Monnet, 55/57 Ave. de la Motte Picquet, Paris, France (75015)
Continuation-in-part of Ser. No. 587,877, Jun. 18, 1975, abandoned. This application Jul. 29, 1977, Ser. No. 821,289
Claims priority, application France, Jan. 13, 1975, 75 73506
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175

256,777
PACKAGING TRAY FOR TAPE CASSETTES
Nils G. Sörsjö, Västra Frölunda, Sweden, assignor to Bengt Petersson New Products Investment AB, Gothenburg, Sweden
Filed Feb. 23, 1978, Ser. No. 880,345
Claims priority, application Sweden, Aug. 23, 1977, 7716800
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—188

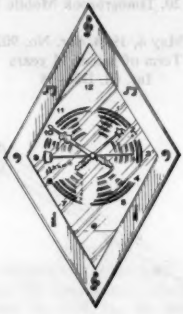


256,778
BOX
Alwin J. Stahel, II, St. Paul, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Jan. 17, 1978, Ser. No. 870,060
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

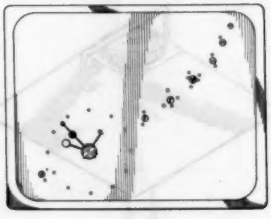


256,779
BOX
Alwin J. Stahel, II, St. Paul, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Jan. 17, 1978, Ser. No. 870,059
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—240

256,780
CLOCK
Carl P. Williams, and Imogene Williams, both of 7168 N. 48th Dr., Glendale, Ariz. 85301
Filed Apr. 14, 1978, Ser. No. 896,327
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

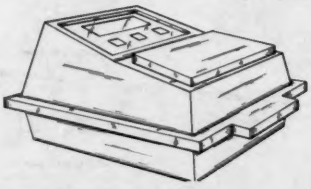


256,781
ECLIPSE CLOCK
Victor L. Mackey, 222 Lincoln St., Healdsburg, Calif. 95448
Filed May 18, 1978, Ser. No. 907,147
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

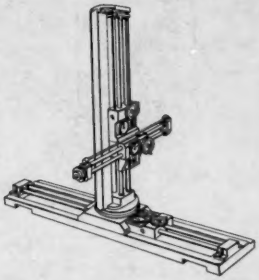


256,782
TRAVEL ALARM CLOCK
Ellworth R. Danz, and Roman J. Szalek, both of LaSalle, Ill., assignors to General Time Corporation
Filed Jan. 5, 1978, Ser. No. 867,356
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—18

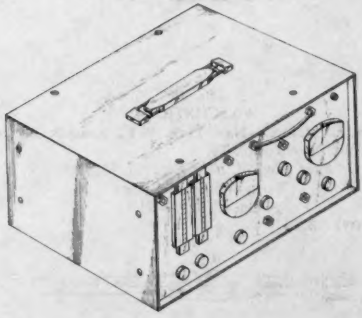
256,783
MOISTURE MEASURING METER
Howard Moon, Ft. Atkinson, Wis., assignor to Seaman Nuclear Corporation, Oak Creek, Wis.
Filed Sep. 18, 1978, Ser. No. 943,237
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56



256,784
THREE-DIMENSIONAL CO-ORDINATE MEASURING APPARATUS
Shingo Nishina, and Masami Saito, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Feb. 22, 1978, Ser. No. 880,237
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



256,785
GAS ANALYZER
John P. Salsgiver, 29 Ethan Allen Dr., Acton, Mass. 01720
Filed Oct. 12, 1976, Ser. No. 731,456
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



256,786
WATER-IN-OIL TESTER
August B. Pedersen, Llanover Cottage, Ockham Rd. South, East Horsley, Surrey, England
Filed May 8, 1978, Ser. No. 904,125
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81

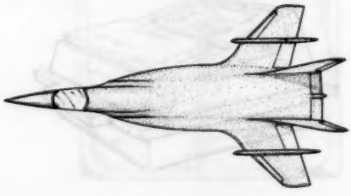
256,787
WATER DETECTOR
Lee O. Petersen, 4611 Lakeside Dr., Grand Island, Nebr. 68801
Filed Jun. 19, 1978, Ser. No. 916,695
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—116

256,788
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,755
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3

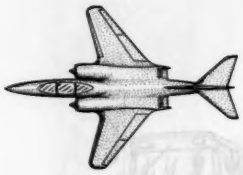
256,789
DECORATIVE CHAIN SEGMENT
Giovanni Mazzini, Arezzo, Italy, assignor to Emmegizeta Metalmeccanica Gori & Zucchi M.G.Z. S.p.A., Arezzo, Italy
Filed Jul. 18, 1978, Ser. No. 925,955
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—13

256,790
CHARM
Antonio M. Jaramillo, 337 W. Olive, Inglewood, Calif. 90301
Filed Oct. 27, 1978, Ser. No. 955,461
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—56

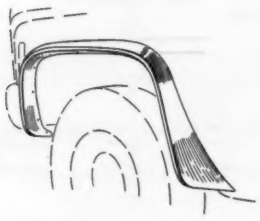
256,791
AIRCRAFT
Jean W. McComas, West Islip, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Nov. 9, 1978, Ser. No. 959,138
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



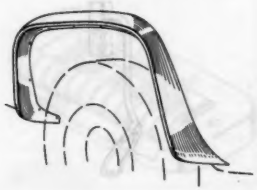
256,792
AIRCRAFT
Jean W. McComas, West Islip, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Nov. 27, 1978, Ser. No. 964,217
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



256,793
FENDER EXTENSION UNIT
Gerald A. Logan, 2455 SW. Montgomery Dr., Portland, Oreg. 97201
Filed Jan. 16, 1978, Ser. No. 869,923
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190



256,794
FENDER EXTENSION UNIT
Gerald A. Logan, 2455 SW. Montgomery Dr., Portland, Oreg. 97201
Filed Jan. 16, 1978, Ser. No. 869,924
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190

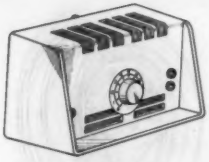


256,795
WHEEL
Russell O. Blanchard, Marshall, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed Oct. 7, 1977, Ser. No. 840,268
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209

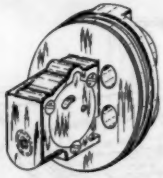
256,796
DESKTOP DATA PROCESSING SYSTEM
Mario G. Plaza, Fremont, Calif., assignor to Durango Systems, Inc., San Jose, Calif.
Filed Sep. 20, 1978, Ser. No. 945,171
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43

256,797
FOLDED ANTENNA
Leonard M. Kudravy, P.O. Box 2751, Palos Verdes Peninsula, Calif. 90274
Filed Mar. 21, 1978, Ser. No. 888,548
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—89

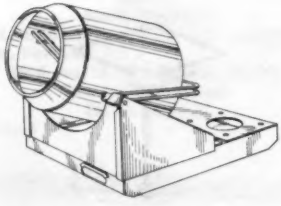
256,798
CONSTANT DISTORTION VOLUME CONTROL UNIT
Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778
Filed Mar. 3, 1978, Ser. No. 883,350
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—96



256,799
FLUID FLOWMETER HOUSING FOR AN AUTOMOTIVE ENGINE FUEL METERING SYSTEM
Carroll J. Dunne, Toledo, Ohio; Dwight A. Knupp, Union Lake, Mich.; Ian J. C. Scott, Madison Heights, Mich.; Leo Golin, Clawson, Mich., and Lawrence W. Tomczak, Rochester, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1978, Ser. No. 892,728
Term of patent 7 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



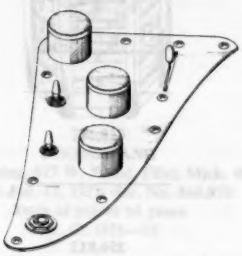
256,800
PORTABLE MIXER
Darrel B. Deen, Elk Point, S. Dak.; Lawrence L. Walsted, and F. John Roost, both of Sioux City, Iowa, assignors to American Equipment Corporation
Filed Aug. 21, 1978, Ser. No. 935,747
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—19



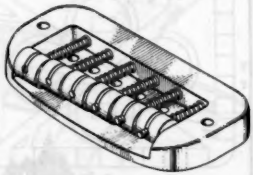
256,801
TRACTOR BODY
Robert A. Skyer, Palatine, and George E. Bowman, Country Club Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 22, 1979, Ser. No. 5,051
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—33

256,802
EVISCERATOR TOOL
Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands
Filed Sep. 18, 1978, Ser. No. 943,561
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—92

256,803
CONTROL PANEL FOR AN ELECTRIC GUITAR OR THE LIKE
C. Leo Fender, 2851 Rolling Hills Dr. Sp. 33, Fullerton, Calif. 92635
Filed Mar. 6, 1978, Ser. No. 884,049
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

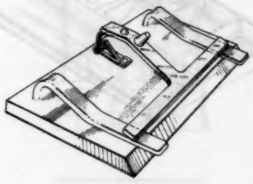


256,804
BRIDGE ASSEMBLY FOR STRINGED MUSICAL INSTRUMENTS
C. Leo Fender, 2851 Rolling Hills Dr. Sp. 33, Fullerton, Calif. 92635
Filed Mar. 6, 1978, Ser. No. 884,041
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



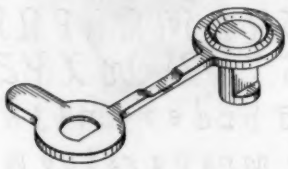
256,805
TYPE FONT
Albert R. Patterson, 9024 49th Pl., College Park, Md. 20740
Filed May 1, 1978, Ser. No. 901,988
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—28

256,806
BOOK PAGE HOLDER
Bert Tisdale, 4643-197th St., Langley, B.C., Canada
Filed Apr. 13, 1978, Ser. No. 896,193
Claims priority, application Canada, Jan. 3, 1978, 0301783
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—34

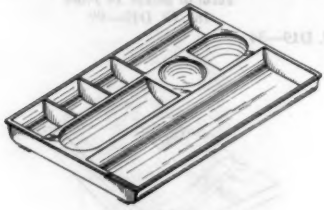


256,807
EDUCATIONAL CLOCK APPARATUS
Diane McLean, 6096 Barry Dr., Cypress, Calif. 90630
Filed Oct. 10, 1978, Ser. No. 950,212
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64

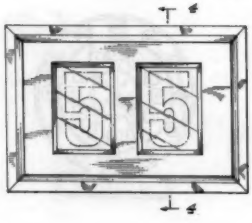
256,808
PAPER BINDING
Eugene Gerber, 12 Hampton Ct., Lake Success, N.Y. 11020, and Sol Zaret, 11 Cedar La. North, Glen Head, N.Y. 11545
Filed Jun. 1, 1979, Ser. No. 44,498
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—65



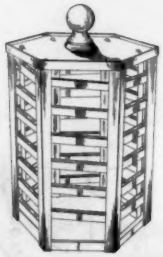
256,809
COMPARTMENTALIZED TRAY
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Dec. 26, 1978, Ser. No. 972,712
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



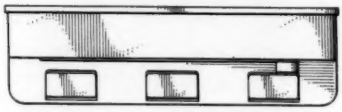
256,810
SIGN
Kelly R. Coleman, 1910 Saddle Hill Rd. South, Duneden, Fla. 33528
Filed Jan. 19, 1978, Ser. No. 871,122
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



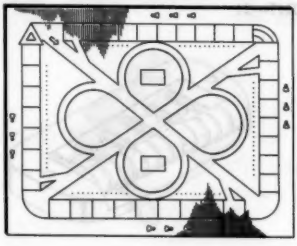
256,811
MARBLE RACEWAY
Raymond E. Crawford, 2091 Fairmeadow Pl., Boise, Id. 83704
Filed Oct. 7, 1977, Ser. No. 840,196
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12



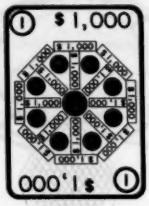
256,812
SIMULATED BASKETBALL GAME CASING
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 14, 1978, Ser. No. 942,396
Claims priority, application Japan, Apr. 27, 1978, 53-17100
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



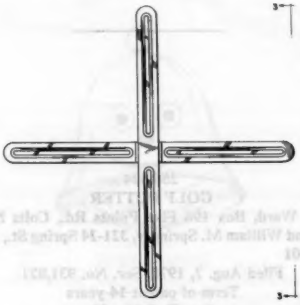
256,813
GAME BOARD
Gordon Zernich, 818 Bellaire Ave., State College, Pa. 16801
Filed Oct. 25, 1978, Ser. No. 954,656
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—35



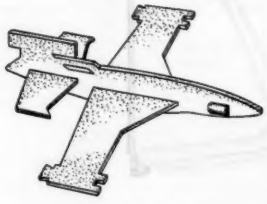
256,814
DECK OF PLAYING CARDS
Saburo M. Ikeda, P.O. Box 839, Bloomington, Calif. 92316
Filed Oct. 5, 1978, Ser. No. 948,750
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—43



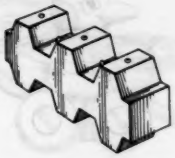
256,815
BOOMERANG
Stephen J. Flemming, 617 W. Wood, Flint, Mich. 48503
Filed Jan. 12, 1978, Ser. No. 868,878
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—85



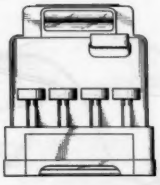
256,816
TOY GLIDER
John F. McMahon, Boxford, and Arthur P. Venditti, Peabody, both of Mass., assignors to CPG Products Corp., Minneapolis, Minn.
Filed May 26, 1978, Ser. No. 909,812
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—89



256,817
TOY BUILDING BLOCK
Leonard Allard, 16 Queen Crescent, Aylmer, Quebec, Canada
Filed Apr. 5, 1978, Ser. No. 893,739
Claims priority, application Canada, Feb. 3, 1978, 0302785
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

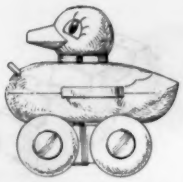


256,818
TOY CASH REGISTER
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 5, 1978, Ser. No. 912,933
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—124

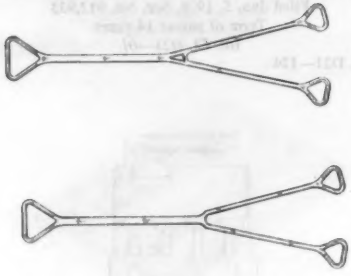


256,819
TOY AMBULANCE
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Aug. 28, 1978, Ser. No. 937,602
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—140

256,820
AMPHIBIOUS TOY DUCK
Sally Phillips, 22631 Rockford Dr., El Toro, Calif. 92630
Filed Dec. 26, 1978, Ser. No. 973,062
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—160



256,821
PHYSICAL EXERCISER
Ben Weider, 165 Finchley Rd., Hampstead, Quebec, Canada
Filed Jul. 1, 1977, Ser. No. 812,395
Claims priority, application Canada, Mar. 1, 1977, 103,771
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

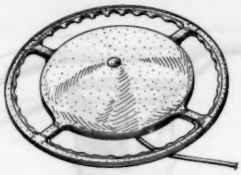


256,822
ARM EXERCISER
Salvatore Ozzimo, P.O. Box 276, Perry, N.Y. 14530
Continuation-in-part of Ser. No. 763,069, Jan. 27, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,698
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195

256,823
TENNIS RACKET
Wilbert R. James, 1250 Berkeley Way, #2, Berkeley, Calif. 94702
Filed Feb. 16, 1978, Ser. No. 878,250
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

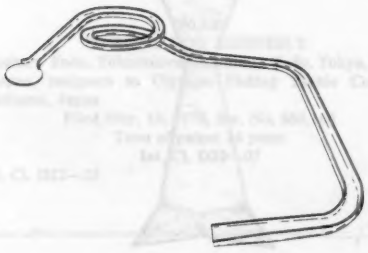
256,824
GOLF PUTTER
Donald T. Ward, Box 196 Five Points Rd., Colts Neck, N.J. 07722, and William M. Springer, 321-24 Spring St., Red Bank, N.J. 07701
Filed Aug. 7, 1978, Ser. No. 931,821
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

256,825
WATER RESCUE WHEEL
Sally Phillips, 22631 Rockford Dr., El Toro, Calif. 92630
Filed Aug. 2, 1978, Ser. No. 930,584
Term of patent 14 years
Int. Cl. D21—*99*
U.S. Cl. D21—99

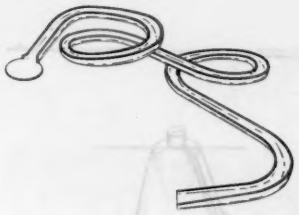


256,826
COMBINATION BELL-SHAPED WATER FLOAT, HANDLE AND CAP
Sally Phillips, 22631 Rockford Dr., El Toro, Calif. 92630
Filed Aug. 2, 1978, Ser. No. 930,588
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—237

256,827
WATER SLIDE OR SIMILAR ARTICLE
John C. Allen, 3rd, Philadelphia, Pa., assignor to S. B. Ramagosa & Sons, North Wildwood, N.J.
Filed May 8, 1978, Ser. No. 903,971
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



256,828
WATER SLIDE OR SIMILAR ARTICLE
John C. Allen, 3rd, Philadelphia, Pa., assignor to S. B. Ramagosa & Sons, North Wildwood, N.J.
Filed May 8, 1978, Ser. No. 903,972
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



256,829
CANOPY
Robert D. Qui, 1529 S. Ellsmere Ave., Los Angeles, Calif. 90019, and Willie D. Kent, 2524 Panorama Ter., Los Angeles, Calif. 90039
Filed May 17, 1976, Ser. No. 687,393
The portion of the term of this patent subsequent to Sep. 15, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—253

256,830
RIFLE TELESCOPE MOUNT
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Jan. 25, 1978, Ser. No. 872,270
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7

256,831

FIRECRACKER

Hitoshi Kaneko, Uwajima, Japan, assignor to Kaneko Company, Uwajima, Japan

Filed Oct. 4, 1978, Ser. No. 948,430

Claims priority, application Japan, Apr. 14, 1978, 53-14456

Term of patent 14 years

Int. Cl. D22—*03*

U.S. Cl. D22—10

256,832

INSECT TRAP

James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Oct. 16, 1978, Ser. No. 951,672

Term of patent 14 years

Int. Cl. D22—*06*

U.S. Cl. D22—19

256,833

INSECT TRAP

James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Oct. 16, 1978, Ser. No. 951,675

Term of patent 14 years

Int. Cl. D22—*06*

U.S. Cl. D22—19

256,834

INSECT TRAP

James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

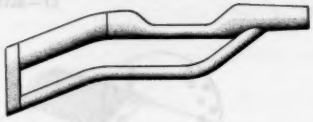
Filed Oct. 16, 1978, Ser. No. 951,676

Term of patent 14 years

Int. Cl. D22—*06*

U.S. Cl. D22—19

256,835
FISHING ROD HANDLE
James E. Weise, Jr., 387 S. Marimar, Fort Myers, Fla. 33905
Filed Mar. 9, 1978, Ser. No. 885,099
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



256,836
HANDLE FOR A FISHING ROD ASSEMBLY
Masaharu Endo, Tokorozawa, and Koshi Endo, Tokyo, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Mar. 13, 1978, Ser. No. 886,166
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

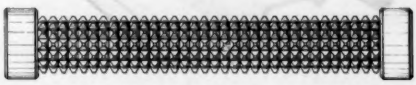
256,837
HANDLE FOR A FISHING ROD ASSEMBLY
Masaharu Endo, Tokorozawa, and Koshi Endo, Tokyo, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Mar. 13, 1978, Ser. No. 886,167
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

256,838
FISHING ROD ASSEMBLY
Masaharu Endo, Tokorozawa, and Koshi Endo, Tokyo, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Mar. 13, 1978, Ser. No. 886,168
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

256,839
FISHING ROD ASSEMBLY
Masaharu Endo, Tokorozawa, and Koshi Endo, Tokyo, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Mar. 13, 1978, Ser. No. 886,171
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

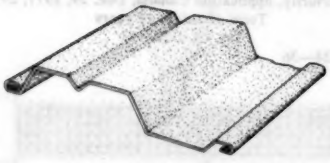
256,840
SOLAR RADIATION COLLECTOR
Ami Katz, Ramath Gan, Israel, assignor to Electra (Israel) Ltd., Tel Aviv, Israel
Filed Feb. 17, 1978, Ser. No. 879,104
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—72

256,841
MASSAGER OR SIMILAR ARTICLE
Robert E. Corbett, P.O. Box 1344, Brooks, Alberta, Canada (T0J 0J0), and Peter T. T. Macklin, R.R. 2, Nanton, Alberta, Canada (T0L 1R0)
Filed Apr. 24, 1978, Ser. No. 899,764
Claims priority, application Canada, Dec. 29, 1977, 2912772
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36

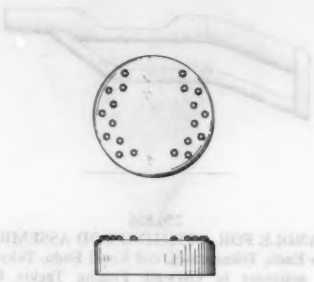


256,842
BUILDING
Lyle Finley, Chattanooga, Tenn., assignor to Golden Gallon, Inc., Chattanooga, Tenn.
Filed Aug. 7, 1978, Ser. No. 931,818
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17

256,843
SHEET PILING
Jens H. Madsen, Guelph, Canada, assignor to Armco Inc., Middletown, Ohio
Filed Sep. 27, 1978, Ser. No. 946,340
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

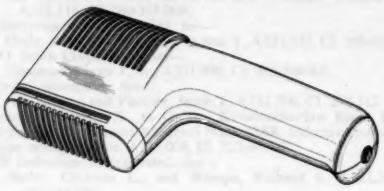


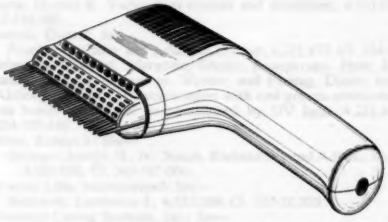
256,844
CANDLE SUPPORT CAKE FORM
Mildred Conn, 6909 Pennsylvania St., Merrillville, Ind. 46410
Filed Nov. 30, 1978, Ser. No. 964,812
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—10

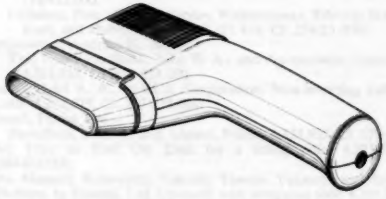


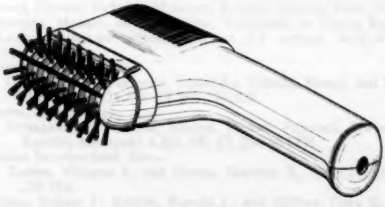
256,845
PORTABLE SPOTLIGHT
John H. Zelina, Jr., and Francis J. Zelina, both of Erie, Pa., assignors to Lighting Systems, Inc., Erie, Pa.
Filed Aug. 21, 1978, Ser. No. 935,320
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—45

256,846
HAIR DRYER WITH ACCESSORY ATTACHMENTS
Heinz-Ulrich Haase, Kronberg, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany
Filed May 3, 1978, Ser. No. 902,790
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 738660
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13

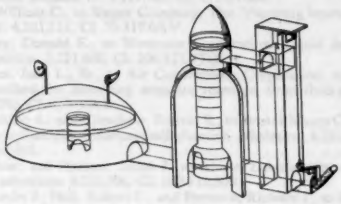








256,847
SMALL ANIMAL HABITAT
Peter DeSousa, 106 Webster St., Rockland, Mass. 02370
Filed Oct. 14, 1977, Ser. No. 842,054
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF SEPTEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
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A. Nattermann & Cie. GmbH: *See—*
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Abbott Laboratories: *See—*
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ACF Industries, Incorporated: *See—*
Basler, Glennon L.; and Wempe, Richard J., 4,221,358, Cl. 251-144.000.
Holt, Jan D., 4,221,397, Cl. 280-436.000.

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Adams, Harold R. Valve stem cleaner and positioner. 4,221,016, Cl. 15-256.500.

Adamski, Gunter: *See—*
Prochnow, Claus; and Adamski, Gunter, 4,221,477, Cl. 354-82.000.

Adelmann, Siegfried; Margotte, Dieter; Rosenkranz, Hans J.; Vernaleken, Hugo; Nouvertne, Werner; and Freitag, Dieter, to Bayer Aktiengesellschaft. Polycarbonates with end groups containing double bonds which can be crosslinked by UV light. 4,221,645, Cl. 204-159.140.

Adkins, Robert J.: *See—*
Graeser, Joseph H., Jr.; Natoli, Richard A.; and Adkins, Robert J., 4,222,056, Cl. 343-767.000.

Advance Lifts, Incorporated: *See—*
Richards, Lawrence I., 4,221,280, Cl. 187-18.000.

Advanced Curing Systems, Inc.: *See—*
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Lermann, Peter; Cocron, Istvan; Wagensonner, Eduard; Borowski, Kurt; and Huber, Theodor, 4,221,474, Cl. 354-23.00D.

Agopsowicz, Andrzej K.: *See—*
Tye, Frank L.; Shaw, John E. A.; and Agopsowicz, Andrzej K., 4,221,853, Cl. 429-224.000.

Ahmed, Adel A. A., to RCA Corporation. Non-inverting buffer circuits. 4,221,979, Cl. 307-255.000.

Ahmed, Fahim: *See—*
Barsellotti, John A.; and Ahmed, Fahim, 4,221,935, Cl. 179-17.00E.

Aho, Yrjo, to Exel Oy. Disk for a skiing pole. 4,221,392, Cl. 280-824.000.

Aida, Masaaki; Kobayashi, Takashi; Taneda, Yukinori; and Sugimoto, Noboru, to Hitachi, Ltd. Covered wire wrapping tool. 4,221,042, Cl. 29-564.400.

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Tsang, Albert C.; and Ainsworth, Oliver C., 4,221,727, Cl. 260-348.370.

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Alexander, Jack L., Sr., 4,221,240, Cl. 139-1.00R.

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Okutsu, Eiichi; Akimura, Yoshitaka; Takada, Shunji; and Mifune, Hiroyuki, 4,221,857, Cl. 430-264.000.

Akutsu, Mitsuo: *See—*
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Akzona Incorporated: *See—*
Zeelen, Filippus J.; and Groen, Marinus B., 4,221,713, Cl. 260-239.55R.

Alaimo, Robert J.; Storrin, Ronald J.; and Millner, Ozra E., Jr., to Morton-Norwich Products, Inc. 3-[[(4-Aminophenyl)sulfonyl]amino]-N-[diaminophosphinyl]-benzamide. 4,221,730, Cl. 260-397.70R.

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Ericson, Richard E., 4,221,381, Cl. 272-99.000.

Albert, William C., to Singer Company, The. Vibrating beam accelerometer. 4,221,131, Cl. 73-517.0AV.

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Algieri, Aldo A.; and Crenshaw, Ronnie R., to Bristol-Myers Company. 1-(Alkynyl)amino-1-(mercaptoalkyl)amino ethylenes. 4,221,737, Cl. 260-465.400.

Ali, Akhtar; and Plattner, Jacob J., to Abbott Laboratories. Chromogenic substrates. 4,221,706, Cl. 260-112.50R.

Allen, Leslie J.; Hall, Robert L.; and Penneck, Richard J., to Raychem Limited. Coil connector. 4,221,457, Cl. 339-275.00R.

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Ray, Ranjan, 4,221,592, Cl. 75-122.000.
Vander Mey, John E., 4,221,674, Cl. 252-141.000.

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Altenpohl, William F.; and Altenpohl, Paul J., 4,221,106, Cl. 53-530.000.

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Dawless, Robert K.; Graziano, Robert E.; and Bonarett, Arthur A., 4,221,590, Cl. 75-68.00R.

Alvino, William M., to Westinghouse Electric Corp. Adhesive. 4,221,840, Cl. 428-423.500.

Amax Inc.: *See—*
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Meyer, Gustavo A.; Peters, Mark A.; and Leaver, Helen S., 4,221,765, Cl. 423-24.000.

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McKenzie, Thomas C.; Crawley, Lantz S.; and Brown, John J., 4,221,715, Cl. 260-244.400.
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,221,907, Cl. 536-118.000.
Querry, Merle V.; and Cano, Francis R., 4,221,906, Cl. 536-1.000.
Tenne, Frank D., 4,221,816, Cl. 424-322.000.
Tenne, Frank D., 4,221,817, Cl. 424-322.000.

American Home Products Corporation: *See—*
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Shibata, Kizo; Ootsuka, Ichiro; Anada, Shyoichi; and Wakasugi, Kunio, 4,221,640, Cl. 204-33.000.

Anarad Inc.: *See*—
Burrows, Donald E., 4,221,130, Cl. 73-421.50R.

Andco Incorporated: *See*—
Mamula, Ronald S.; and Dotson, Samuel C., 4,221,537, Cl. 414-786.000.

Anderka, Gerold; Ritter, Hans-Joachim; and Zuchner, Werner, to Mesne Koh-I-Noor Rapidograph, Inc. Writing fluid cartridge. 4,221,496, Cl. 401-258.000.

Anderson, Jeff L., to NCR Corporation. Magnetic hysteresis driven recording element and method. 4,221,163, Cl. 101-93.010.

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Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P. Apparatus for preparing carbides. 4,221,762, Cl. 422-186.000.

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Anno, James N.; and Boeing, Howard H., to Research Dynamics, Inc. Method of producing porous lithium oxide. 4,221,775, Cl. 423-641.000.

Antholz, Phillip; and Swarthout, E. Jack, to Illinois Cereal Mills. Absorbent polymeric compositions derived from corn flour and starch. 4,221,684, Cl. 260-17.4GC.

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Aranda Lopez, Jose M.; Conde Hinojosa, Jose R.; and Ramos Martos, Juan. Electronic fruit grading machines. 4,221,297, Cl. 209-576.000.

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Armstrong, William A.; and Wheat, James A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Battery separator. 4,221,846, Cl. 429-29.000.

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Arnaud, Michel; and Roussel, Christian, to Rhone-Poulenc Industries. Process for preparing alkylpyrylium salts. 4,221,722, Cl. 260-345.100.

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Bair, Harvey E., to Bell Telephone Laboratories, Incorporated. Fiber connector gap material. 4,221,461, Cl. 350-96.200.

Baker, Christopher L., Jr. Carrier for skis and ski poles. 4,221,314, Cl. 224-45.00S.

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Schippers, Heinz; Bauer, Karl; Lenk, Erich; and Dammann, Peter, 4,221,345, Cl. 242-47.000.

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Baron, Lynne B.; and Lee, George A., to Dow Chemical Company, The. Photocurable partially esterified polyepoxides. 4,221,892, Cl. 525-531.000.

Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., to Raytheon Company. Optical modulator with ringing suppression. 4,221,463, Cl. 350-150.000.

Barsellotti, John A.; and Ahmed, Fahim, to International Standard Electric Corporation. Control circuit for telephone subscriber station. 4,221,935, Cl. 179-17.00E.

Bartenbach, Christian. Lighting system. 4,222,091, Cl. 362-32.000.

Barth, Thomas G. Stringed musical instrument. 4,221,151, Cl. 84-314.00R.

Bartley, Richard H.: *See—*
Piontkowski, Carl F.; Brugger, Robert E.; Bartley, Richard H.; and Waldron, Ernest J., Jr., 4,221,416, Cl. 294-17.000.

Bartley, Thomas S., to International Paper Company. Apparatus for supplying wood fiber material to a pulp paper plant through a single off-loading station. 4,221,520, Cl. 414-355.000.

Bartling, Lothar: *See—*
Augustin, Friedrich; and Bartling, Lothar, 4,221,601, Cl. 106-171.000.

Bartolini, Robert A.: *See—*
Bell, Alan E.; and Bartolini, Robert A., 4,222,071, Cl. 358-128.500.

BASF Aktiengesellschaft: *See—*
Autzen, Horst; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Rudolf, Peter; Sarnecki, Wilhelm; and Steck, Werner, 4,221,776, Cl. 423-634.000.
Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, 4,221,711, Cl. 260-207.100.

BASF Farben & Fasern AG: *See—*
Augustin, Friedrich; and Bartling, Lothar, 4,221,601, Cl. 106-171.000.

Basler, Glennon L.; and Wempe, Richard J., to ACF Industries, Incorporated. Positive clapper outlet valve. 4,221,358, Cl. 251-144.000.

Bast, Bernard J., to Atlas Powder Company. Dual compartmented container. 4,221,290, Cl. 206-219.000.

Bauer Bros. Co., The: *See—*
Skeen, Lawrence, 4,221,343, Cl. 241-244.000.

Bauer, Karl: *See—*
Schippers, Heinz; Bauer, Karl; Lenk, Erich; and Dammann, Peter, 4,221,345, Cl. 242-47.000.

Baum, Kurt; and Lerdal, Duane A., to United States of America, Navy. Bis-(3,3-dinitrobutyl)-polysiloxane. 4,221,736, Cl. 556-422.000.

Bauman, William C.: *See—*
Lee, John M.; and Bauman, William C., 4,221,767, Cl. 423-179.500.

Baumgaertner, Heinrich; and Barchewitz, Ekkehard, to Hochtemperatur-Reaktorbau GmbH. Heat exchanger for the transmission of heat produced in a high temperature reactor to an intermediate circuit gas. 4,221,262, Cl. 165-157.000.

Bausch & Lomb Incorporated: *See—*
Schrier, Israel, 4,221,414, Cl. 294-1.0CA.

Baxter Travenol Laboratories, Inc.: *See—*
Cotter, Richard, 4,221,866, Cl. 435-4.000.
Dubczak, John A.; and Weary, Marlys E., 4,221,865, Cl. 435-4.000.

Bayer Aktiengesellschaft: *See—*
Adelmann, Siegfried; Margotte, Dieter; Rosenkranz, Hans J.; Vernaleken, Hugo; Nouvertne, Werner; and Freitag, Dieter, 4,221,645, Cl. 204-159.140.
Elfert, Klaus; Wolf, Gerhard D.; Bentz, Francis; and Kunzel, Hans E., 4,221,903, Cl. 528-341.000.
Fiege, Helmut; and Wedemeyer, Karlfried, 4,221,719, Cl. 260-340.50R.
Humme, Gert; Fahnler, Friedrich; Neuray, Dieter; Ott, Karl-Heinz; and Tacke, Peter, 4,221,879, Cl. 525-66.000.
Wagner, Kuno, 4,221,876, Cl. 521-158.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Koehler, Rudolf, 4,221,205, Cl. 123-179.00H.

BBC, Brown Boveri & Cie.: *See—*
De Mesmaeker, Ivan, 4,222,085, Cl. 361-80.000.

Beacon Photo Service, Inc.: *See—*
Savarick, Alan, 4,221,481, Cl. 355-72.000.

Beaton, John M.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,221,868, Cl. 435-56.000.

Becker, Harvey W. Apparatus for suspending articles, such as skis, for convenient storage. 4,221,024, Cl. 24-115.00H.

Becker, Herbert, to Metallwerke Max Brose GmbH & Co. Window lifting arrangement for a curved window pane. 4,221,079, Cl. 49-351.000.

Becker, Robert A.: *See—*
Neddermeyer, Seth H.; and Becker, Robert A., 4,221,168, Cl. 102-211.000.

Beckman, Joseph A., to Firestone Tire & Rubber Company, The. Rubber-reinforcing blacks. 4,221,608, Cl. 106-307.000.

Beech, Keith J. W., to Lucas Industries Limited. Electrical coil assembly. 4,222,023, Cl. 336-209.000.

Beecham Group Limited: *See—*
Box, Stephen J., 4,221,870, Cl. 435-119.000.
Gaster, Laramie M., 4,221,741, Cl. 568-314.000.

Beehive Machinery, Inc.: *See—*
dos Santos, Claudio, 4,221,340, Cl. 241-7.000.

Beguin, Alain, to Societe Civile de Recherches et d'Applications Scientifiques. Pyridine derivative, its preparation and use. 4,221,795, Cl. 424-256.000.

Behar, Meir; Peshes, Ori; and Liebersohn, Aharon, to Makhteshim Chemical Works Limited. Brominated bisphenol-a epoxy compositions. 4,221,893, Cl. 525-438.000.

Beiersdorf Aktiengesellschaft: *See—*
Cohnen, Erich, 4,221,798, Cl. 424-258.000.

Beilfuss, Wolfgang: *See—*
Eggensperger, Heinz; Beilfuss, Wolfgang; and Zerling, Wolfgang, 4,221,660, Cl. 210-764.000.

Bell, Alan E.; and Bartolini, Robert A., to RCA Corporation. Sensitivity information record. 4,222,071, Cl. 358-128.500.

Bell Telephone Laboratories, Incorporated: *See—*
Anglikowski, Ronald E.; Hui, George P.; Lese, Gregory; and Nash, Donald H., 4,221,932, Cl. 179-2.0EA.
Bair, Harvey E., 4,221,461, Cl. 350-96.200.
Clemons, Donald G.; and Procyk, Frank J., 4,222,112, Cl. 365-189.000.
Cunningham, Peter B.; and Smith, James C., 4,221,939, Cl. 179-175.31R.
Knowlton, Kenneth C., 4,222,076, Cl. 358-263.000.
Smith, Peter W.; and Turner, Edward H., 4,221,472, Cl. 350-356.000.

Bendix Corporation, The: *See—*
Mueller, Paul A.; Hartz, John R.; Pawlowski, Elaine D.; and Freedman, M. David, 4,221,974, Cl. 250-563.000.
Niles, Paul D.; Whallon, William P., Jr.; and Normann, Richard W., 4,221,446, Cl. 339-49.00R.

Benesh, Peter: *See—*
Gregory, Ralph R.; and Benesh, Peter, 4,221,213, Cl. 128-70.000.

Benson, Gustav E.; and Dale, Ralph S., to Owens-Corning Fiberglas Corporation. Apparatus for treating strand. 4,221,183, Cl. 118-125.000.

Benson, Mason; and McIntosh, James, to Carolina Enterprises, Inc. Cycle-type vehicle attachment. 4,222,040, Cl. 340-384.00E.

Benson, Ronald B.: *See—*
Nord, Keith W.; Quast, Joseph G.; Williams, William H.; Willmore, Naaman W.; and Benson, Ronald B., 4,221,519, Cl. 414-49.000.

Bentz, Francis: *See—*
Elfert, Klaus; Wolf, Gerhard D.; Bentz, Francis; and Kunzel, Hans E., 4,221,903, Cl. 528-341.000.

Berec Group Limited: *See—*
Tye, Frank L.; Shaw, John E. A.; and Agopsowicz, Andrzej K., 4,221,853, Cl. 429-224.000.

Berezkin, Viktor G.: *See—*
Shmidel, Evgeny B.; Berezkin, Viktor G.; Kolomiets, Ljudmila N.; Sheftelevich, Julia L.; and Shepelev, Valery E., 4,221,668, Cl. 210-635.000.

Berg, David A., to Allis-Chalmers Corporation. Draft arm extension stop. 4,221,399, Cl. 280-478.00R.

Bergfelt, Nils H.; Bruce, H. William; and Roeser, Heinz J., to Optical Coating Laboratory, Inc. Glass scribing apparatus. 4,221,150, Cl. 83-882.000.

Berkhin, Iosif M.: *See—*
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Berlin, Aaron S., deceased; by Berlin, Sara L., executrix; by Berlin, Howard M., executor; Little, Vincent C.; and Leadore, Toney E., to United States of America, Army. Delay burster for a projectile. 4,221,167, Cl. 102-69.000.

Berlin, Howard M., executor: *See—*
Berlin, Aaron S., deceased; Berlin, Sara L., executrix; Berlin, Howard M., executor; Little, Vincent C.; and Leadore, Toney E., 4,221,167, Cl. 102-69.000.

Berlin, Sara L., executrix: *See—*
Berlin, Aaron S., deceased; Berlin, Sara L., executrix; Berlin, Howard M., executor; Little, Vincent C.; and Leadore, Toney E., 4,221,167, Cl. 102-69.000.

Berman, James S., to Citibank, N.A. Banking protection system for 24 hour banking. 4,221,086, Cl. 52-65.000.

Bernede, Remy J., to Etablissements Caillau. Clamp ring. 4,221,030, Cl. 24-274.00R.

Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., to E. R. Squibb & Sons, Inc. Steroid derivatives and their use in radioimmunoassays. 4,221,725, Cl. 260-345.80R.

Bernstein, Jack: *See—*
Wade, Peter C.; Bernstein, Jack; and Haugwitz, Rudiger D., 4,221,796, Cl. 424-256.000.

Bernstein, Seymour: *See*—
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,221,907, Cl. 536-118.000.

Bertrand, Hans: *See*—
Limque, Ferdinand; and Bertrand, Hans, 4,221,561, Cl. 432-128.000.

Besore, Calvin H.; and Wampler, Charles J., deceased (by Wampler, Rebecca R., administratrix), to Quality Mills, Inc. Profile stitching apparatus and method. 4,221,176, Cl. 112-121.120.

Besson, Raymond J., to Laboratoires de Physicochimie Appliquees ISSEC; and KDP Societe anonyme Keller Dorian Papiers. Piezoelectric resonator with improved suspension. 4,221,986, Cl. 310-344.000.

Bettker, Clyde, Jr.; and Snow, Lawrence. Movable vehicle partition assembly. 4,221,421, Cl. 296-24.00B.

Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. Alpha-halomethyl derivatives of histamine and related compounds. 4,221,914, Cl. 548-342.000.

Bi, Le-Khac; and Milkovich, Ralph, to Arco Polymers, Inc. Clear impact resistant thermoplastic star-block copolymers. 4,221,884, Cl. 525-314.000.

Bianchi, Emilio, to AXIAL International Aktiengesellschaft. Fan comprising a blade pitch control mechanism. 4,221,541, Cl. 416-157.00R.

BICC Limited: *See*—
Bonikowski, Zbigniew; Keen, Bruce H.; Salamon, Dennis M.; and Tennant, John A., 4,221,947, Cl. 219-10.410.

Biersdorf Aktiengesellschaft: *See*—
Pietsch, Hanns; Schulte, Dietrich; Sachau, Gunther; and Quandt, Jurgen C., 4,221,214, Cl. 128-90.000.

Birkmeyer, William J.: *See*—
Erikson, J. Alden; Lewarchik, Ronald J.; and Birkmeyer, William J., 4,221,891, Cl. 525-514.000.

Bison-Werke, Bahre and Greten GmbH & Co. KG: *See*—
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,221,950, Cl. 219-10.810.

Bjork, Jan; Olsson, Jan T.; and Holmberg, Bengt M., to SAB Industri AB. Device for anchoring a buoyant mine at a preset depth. 4,221,166, Cl. 102-13.000.

Black, Gregory T.; and Johnson, Robert A., to Northrop Corporation. Fiber-optic moisture sensor for composite structures. 4,221,962, Cl. 250-227.000.

Blancou, Hubert: *See*—
Commeyras, Auguste; Blancou, Hubert; and Lantz, Andre, 4,221,734, Cl. 260-408.000.

Blausey, Richard H., Jr.: *See*—
Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., 4,221,053, Cl. 33-174.00L.

Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., to Libbey-Owens-Ford Company. Inspection apparatus. 4,221,053, Cl. 33-174.00L.

Bocharov, Vladimir I.: *See*—
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Bock, Gert, to Robert Bosch GmbH. Method and apparatus for recording of wide band signals, particularly video signals. 4,222,078, Cl. 360-9.000.

Bock, Jan: *See*—
Makowski, Henry S.; Bock, Jan; and Lundberg, Robert D., 4,221,712, Cl. 260-23.50A.

Bode, Klaus: *See*—
Balzau, Gerhard; Kompa, Gunter; Steinmann, Manfred; and Bode, Klaus, 4,221,509, Cl. 406-91.000.

Bodewein, Jakob; and Hector, Gunter, to Jagenberg Werke Aktiengesellschaft. Apparatus for decelerating and stacking sheets. 4,221,377, Cl. 271-183.000.

Bodor, Nicholas S.; and Sloan, Kenneth B., to INTERx Research Corporation. Esteramide prodrugs of anti-inflammatory corticosteroids. 4,221,787, Cl. 424-241.000.

Boeing Commercial Airplane Company: *See*—
Hufnagl, Gerhart; and Zehnder, Clark R., 4,221,041, Cl. 29-512.000.

Boeing Company, The: *See*—
Johnson, Walter J., 4,222,048, Cl. 340-747.000.
Weeks, Harold E., 4,221,470, Cl. 350-319.000.

Boeing, Howard H.: *See*—
Anno, James N.; and Boeing, Howard H., 4,221,775, Cl. 423-641.000.

Boettger, Heinz G., to Jet Propulsion Laboratory. Sample processor for chemical analysis. 4,221,568, Cl. 23-230.00R.

Bolker, Barry F. T.: *See*—
Tisone, Thomas C.; and Bolker, Barry F. T., 4,221,649, Cl. 204-192.00D.

Bolstad, James D.: *See*—
Bucci, Giuseppe D.; and Bolstad, James D., 4,221,123, Cl. 73-38.000.

Bonarett, Arthur A.: *See*—
Dawless, Robert K.; Graziano, Robert E.; and Bonarett, Arthur A., 4,221,590, Cl. 75-68.00R.

Boner, Beat: *See*—
Rohr, Otto; Pissiotas, Georg; and Boner, Beat, 4,221,581, Cl. 71-70.000.

Bonikowski, Zbigniew; Keen, Bruce H.; Salamon, Dennis M.; and Tennant, John A., to BICC Limited. Annealing of wire. 4,221,947, Cl. 219-10.410.

Bonnetain, Yves. Shock absorption bumper for an automotive vehicle. 4,221,413, Cl. 293-122.000.

Boon, Derk J., to Reeves Brothers, Inc. Centrifuge deposition device and continuous slab mold for processing polymeric-foam-generating liquid reactants. 4,221,555, Cl. 425-89.000.

Boots Company Limited, The: *See*—
Garrod, John F.; Greenwood, Douglas; Copping, Leonard G.; and Brookes, Robert F., 4,221,582, Cl. 71-76.000.

Borg-Warner Corporation: *See*—
Harnish, James R., 4,221,116, Cl. 62-209.000.

Borowski, Kurt: *See*—
Lermann, Peter; Cocron, Istvan; Wagensonner, Eduard; Borowski, Kurt; and Huber, Theodor, 4,221,474, Cl. 354-23.00D.

Boscardin, Lucio; Frustagli, Stefano; and Veronese, Alfredo. Toothbrush with built-in "squeezable" valved toothpaste holder. 4,221,492, Cl. 401-184.000.

Boschung, Marcel, to Marcel Boschung, Firma. Early ice-warning device. 4,222,044, Cl. 340-581.000.

Botnick, Irlin H. Non-freeze wall hydrant. 4,221,233, Cl. 137-218.000.

Boucher, Jacques: *See*—
Slonina, Jean-Pierre; Girard, Pierre; Boucher, Jacques; and Gellon, Joseph, 4,221,622, Cl. 156-93.000.

Bouley, Jean-Claude A.: *See*—
Logerot, Bernard A.; Pechard, Lucien L.; and Bouley, Jean-Claude A., 4,221,448, Cl. 339-75.0MP.

Bowden, George F.; Grist, Warren W.; and Cook, Ramon J., to Burke Company, The. Tie rod assembly for concrete form panels. 4,221,357, Cl. 249-191.000.

Bowden, Humphrey G.: *See*—
Cole, William L.; Buckle, Valerie A.; and Bowden, Humphrey G., 4,221,493, Cl. 401-199.000.

Bowers, Thomas E.; and Tomlinson, Dennis E. Phase locked loop for deriving clock signal from aperiodic data signal. 4,222,013, Cl. 331-1.00A.

Bowman, John C.; and Bowman, Terry K. Convertible chair and bed. 4,221,428, Cl. 297-110.000.

Bowman, Terry K.: *See*—
Bowman, John C.; and Bowman, Terry K., 4,221,428, Cl. 297-110.000.

Box, Stephen J., to Beecham Group Limited. Process for producing antibiotics. 4,221,870, Cl. 435-119.000.

Braaten, Norman J. Digitally-programmed arbitrary waveform generator. 4,222,108, Cl. 364-608.000.

Bracey, Bobby R.; and Spector, George. Filter wrench. 4,221,140, Cl. 81-64.000.

Bradbury, Christopher G., to Leesona Corporation. Extrusion process. 4,221,753, Cl. 264-142.000.

Brasch, Robert C., to University of California, The Regents of the. Infant elevator for use with an incubator. 4,221,211, Cl. 128-1.00B.

Braski, David N.; and Leitnaker, James M., to United States of America, Energy. Method for homogenizing alloys susceptible to the formation of carbide stringers and alloys prepared thereby. 4,221,610, Cl. 148-11.50N.

Braun, Morris; and Spransy, George B., to W. Braun Company. Roll-on applicator with sharp sealing ring. 4,221,495, Cl. 401-213.000.

Braunstein, Morris: *See*—
Pedinoff, Melvin E.; Stafsudd, Oscar M.; and Braunstein, Morris, 4,221,464, Cl. 350-152.000.

Bray, James W., to Shells, Inc. Plant receptacle and method of producing same. 4,221,752, Cl. 264-121.000.

Bray, Richard L. Accessory light cover. 4,222,092, Cl. 362-80.000.

Breault, George O.; and Kwan, King C., to Merck & Co., Inc. Treatment of hypertension. 4,221,813, Cl. 424-309.000.

Breazu, Dorin: *See*—
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.

Breithaupt, David W., to RCA Corporation. Horizontal synchronizing system. 4,222,074, Cl. 358-149.000.

Breitholz, Claes; and Dahlin, Rolf, to Dynapac Maskin AB. Vibratory device. 4,221,499, Cl. 404-117.000.

Brenner, Douglas; and Oswald, Alexis A., to Exxon Research & Engineering Co. Plasticization of quaternary phosphonium ion containing polymers. 4,221,887, Cl. 525-332.000.

Bricker, Gene D.: *See*—
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Bridgestone Tire Co., Ltd.: *See*—
Yukuta, Toshio; Ishiwaka, Takumi; and Yamaguchi, Noboru, 4,221,875, Cl. 521-128.000.

Bristol-Myers Company: *See*—
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,221,737, Cl. 260-465.400.

Britt, Jack: *See*—
Wilde, Geoffrey L.; and Britt, Jack, 4,221,114, Cl. 60-242.000.

Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Thio-bis alkyl lactone acids and esters thereof. 4,221,720, Cl. 260-343.600.

Brookes, Robert F.: *See*—
Garrod, John F.; Greenwood, Douglas; Copping, Leonard G.; and Brookes, Robert F., 4,221,582, Cl. 71-76.000.

Brown, Boveri & Cie AG: *See*—
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Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., to Western Electric Company, Incorporated. Method of fabricating a packaged electrical device. 4,221,034, Cl. 29-25.420.

Brown, James A.; and Frentzel, Herman E., to Matson Navigation Company. Deck container restraint apparatus and process. 4,221,515, Cl. 410-32.000.
Brown, John J.: *See—*
McKenzie, Thomas C.; and Brown, John J., 4,221,714, Cl. 260-244.400.
McKenzie, Thomas C.; Crawley, Lantz S.; and Brown, John J., 4,221,715, Cl. 260-244.400.
Brown, Leonard L. Automobile cut-off anti-theft system. 4,222,033, Cl. 340-64.000.
Brown, Lloyd C., to General Atomic Company. Fluidized bed gas coating apparatus. 4,221,182, Cl. 118-716.000.
Brown, Neil L.: *See—*
Lawson, Kenneth D.; and Brown, Neil L., 4,221,128, Cl. 73-861.290.
Bruce, H. William: *See—*
Bergfelt, Nils H.; Bruce, H. William; and Roeser, Heinz J., 4,221,150, Cl. 83-882.000.
Bruce, Peter. Locking arrangement particularly for shackles. 4,221,252, Cl. 151-5.000.
Brugger, Robert E.: *See—*
Piontkowski, Carl F.; Brugger, Robert E.; Bartley, Richard H.; and Waldron, Ernest J., Jr., 4,221,416, Cl. 294-17.000.
Brunner-Schwer, Hermann, to Rhen Beteiligungs-und Finanzierungs-AG. Multi-purpose radio. 4,222,119, Cl. 455-140.000.
Brunova, Bohumila: *See—*
Grimova, Jaroslava; Nemecek, Oldrich; Kuchar, Miroslav; and Brunova, Bohumila, 4,221,919, Cl. 562-465.000.
Brunskole, Joseph H., to Pilgrim Technical Products Ltd. Adjustable cable draw mechanism. 4,221,365, Cl. 254-398.000.
Brunton Company, The: *See—*
Kramer, Melvin G., 4,221,328, Cl. 235-454.000.
Bruskotter, Charles B.; and Hamilton, David R., to GTE Products Corporation. Phosphor purification process. 4,221,676, Cl. 252-301.60F.
Brutchen, George W.: *See—*
Fanger, Gene O.; and Brutchen, George W., 4,221,859, Cl. 430-285.000.
Bucci, Giuseppe D.; and Bolstad, James D., to Gould Inc. Separator materials for secondary alkaline battery systems and method of analytically determining the suitability of such materials. 4,221,123, Cl. 73-38.000.
Buckle, Valerie A.: *See—*
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Buendia, Jean; and Vivat, Michel, to Roussel Uclaf. β-Lactones of 2-hydroxy-cyclopentanecarboxylic acid. 4,221,809, Cl. 424-279.000.
Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,221,729, Cl. 260-396.00N.
Bugg, Richard E. F., to U.S. Philips Corporation. Data pulse receiver arrangement. 4,222,117, Cl. 375-110.000.
Bullens, Valere G. J.; Pauw, Hermanus; and Falkenburg, Rudy A., to U.S. Philips Corporation. Device for the quantitative reduction of nitrogen dioxide in gas mixtures. 4,221,761, Cl. 422-54.000.
Bulten, Eric J., to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek. Antifungal and/or antibacterial organotin compounds, and use. 4,221,811, Cl. 424-288.000.
Bumb, Frank E., Jr.: *See—*
Sloan, John W.; and Bumb, Frank E., Jr., 4,222,111, Cl. 364-900.000.
Bunker, Earle R., Jr. Magnetic apparatus appearing to possess only a single pole. 4,222,021, Cl. 335-296.000.
Bunker Ramo Corporation: *See—*
Logerot, Bernard A.; Pechard, Lucien L.; and Bouley, Jean-Claude A., 4,221,448, Cl. 339-75.0MP.
Petrelewicz, Edward F.; and Keglewitsch, Josef, 4,221,451, Cl. 339-105.000.
Burger, William. Protective shield device. 4,221,971, Cl. 250-505.000.
Burgess, Norman E. A., to Domtar Inc. Impact absorbing box. 4,221,294, Cl. 206-521.000.
Burke Company, The: *See—*
Bowden, George F.; Grist, Warren W.; and Cook, Ramon J., 4,221,357, Cl. 249-191.000.
Burkey, David J.; and Clark, Lawrence, to Armstrong Cork Company. Method of embossing wood grain patterns. 4,221,758, Cl. 264-225.000.
Burlington Northern Inc.: *See—*
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Burr-Brown Research Corporation: *See—*
Mrozowski, Andrij; Naylor, Jimmy R.; and Prazak, Paul R., 4,222,107, Cl. 364-571.000.
Burrows, Donald E., to Anarad Inc. Gas sampling device. 4,221,130, Cl. 73-421.50R.
Burton, Richard H. Electronic lock. 4,222,088, Cl. 361-172.000.
Butan, Mioara R.: *See—*
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Butternut Electronics Co.: *See—*
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Butylkin, Jury P.: *See—*
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.
Buuck, Bryce A.; Mihalic, William T.; and Clark, David P., to Eaton Corporation. Plural lash engine valve gear and device for selecting same. 4,221,199, Cl. 123-90.160.
Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Eistetter, Klaus, 4,221,788, Cl. 424-244.000.
Bytzek, Max: *See—*
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,221,821, Cl. 426-420.000.
C & C Metal Products Corporation: *See—*
Peterson, Richard J., 4,221,139, Cl. 79-1.000.
C & D Distributors, Inc.: *See—*
Piontkowski, Carl F.; Brugger, Robert E.; Bartley, Richard H.; and Waldron, Ernest J., Jr., 4,221,416, Cl. 294-17.000.
C. Reichert Optische Werke, AG: *See—*
Sitte, Hellmuth; and Kleber, Heinrich, 4,221,438, Cl. 308-2.00R.
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Stein, Thomas R.; Heck, Roland H.; and Cabal, Albert V., 4,221,654, Cl. 208-15.000.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Fuse terminal block with alternative means for connection to fuse blade contacts. 4,221,455, Cl. 339-186.00M.
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Klimek, Boleslaw M.; and Campanini, Sergio, 4,221,158, Cl. 91-440.000.
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Armstrong, William A.; and Wheat, James A., 4,221,846, Cl. 429-29.000.
Canadair Limited: *See—*
Huvers, Marius E., 4,221,462, Cl. 350-136.000.
Sobolewski, George, 4,221,172, Cl. 105-168.000.
Cano, Francis R.: *See—*
Querry, Merle V.; and Cano, Francis R., 4,221,906, Cl. 536-1.000.
Canon Kabushiki Kaisha: *See—*
Aizawa, Hiroshi; Uchidoi, Masanori; Kozuki, Susumu; Date, Nobuaki; Shimizu, Masami; and Takishima, Yoshiyuki, 4,221,476, Cl. 354-38.000.
Saito, Seiji; and Shintani, Taigan, 4,221,958, Cl. 235-92.00T.
Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,222,105, Cl. 364-518.000.
Tamura, Shuichi, 4,221,475, Cl. 354-25.000.
Cantley, Richard E. Door alarm. 4,222,042, Cl. 340-546.000.
Capewell, Dennis, to Lutron Electronics Co., Inc. D-C Power supply circuit with high power factor. 4,222,096, Cl. 363-44.000.
Cappelli, Nini P. Sports racket. 4,221,383, Cl. 273-73.00C.
Capps, Charles P., to Raytheon Company. Radio frequency lens. 4,222,054, Cl. 343-754.000.
Car Cruise & Associates, Inc.: *See—*
Vencill, Larry E.; Cruse, Harold R.; and Conner, William O., 4,221,420, Cl. 296-1.00A.
Cardenas, Carlos G.; and Din, Zia U., to SCM Corporation. Coupling reaction involving a Grignard and allylic halide. 4,221,742, Cl. 568-393.000.
Carini, Edward, to Hasbro Industries, Inc. Color matching game. 4,221,388, Cl. 273-248.000.
Carlson, Russell L.: *See—*
Stalcup, Robert K.; and Carlson, Russell L., 4,221,469, Cl. 350-310.000.
Carolina Enterprises, Inc.: *See—*
Benson, Mason; and McIntosh, James, 4,222,040, Cl. 340-384.00E.
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Miles, Ronald C.; and Carpenter, Larry D., 4,221,643, Cl. 204-98.000.
Carroll, Thomas J., to Valley Industrial Products. Heat shield blocking and mounting disc for lens grinding. 4,221,083, Cl. 51-284.00R.
Carte, James. Hurdle hauler. 4,221,395, Cl. 280-79.300.
Carter, Danny L. Game board apparatus for game of strategy and chance. 4,221,387, Cl. 273-236.000.
Cascade Corporation: *See—*
Crandall, Richard E., 4,221,526, Cl. 414-469.000.
Casematers (Herts & Essex) Limited: *See—*
Farrell, Michael, 4,221,497, Cl. 403-344.000.
Caserta, Umberto, to SKAUT Prefabbricati S.r.l. Process for constructing buildings for use as dwellings, or for social or industrial use. 4,221,099, Cl. 52-745.000.
Casey, Robert F. Apparatus for raising fish. 4,221,187, Cl. 119-3.000.
Castarede, Armand, to Regie Nationale des Usines Renault. Liner for internal combustion engine. 4,221,196, Cl. 123-41.840.
Castera, Jean-Paul: *See—*
Hepner, Georges; and Castera, Jean-Paul, 4,221,460, Cl. 350-96.130.
Catalyst Research Corporation: *See—*
Harney, David E., 4,221,849, Cl. 429-112.000.
Schneider, Alan A., 4,222,006, Cl. 324-441.000.
Caterpillar Tractor Co.: *See—*
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Freese, Gary P.; and Trayler, Robert J., 4,221,268, Cl. 172-805.000.

Hafele, Joseph C.; and McCornack, John C., 4,221,195, Cl. 123-254.000.
Marquis, Harold E., III; and Nguyen, Nhiem D., 4,222,029, Cl. 340-52.00R.
Stedman, Robert N., 4,221,525, Cl. 414-460.000.
Cavazza, Roberto, to CIR - S.p.A. - Divisione Sasib. Method and apparatus for stacking and transferring packets. 4,221,518, Cl. 414-46.000.
Caveney, Jack E., to Panduit Corp. Flat cable clamp. 4,221,352, Cl. 248-74.0PB.
Cederquist, Karl N.: *See*—
Selander, Stig D.; and Cederquist, Karl N., 4,221,630, Cl. 162-13.000.
Celanese Corporation: *See*—
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., 4,221,726, Cl. 260-346.110.
Unruh, Jerry D., 4,221,744, Cl. 568-454.000.
Central Automotive Industries Ltd.: *See*—
Ohta, Motomu, 4,221,544, Cl. 417-269.000.
Central Research Laboratories, Inc.: *See*—
Haaker, Lester W.; and Jelatis, Demetrius G., 4,221,516, Cl. 414-5.000.
Centrala Industriala de Medicamente Cosmetice Coloranti si Lacuri: *See*—
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.
Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Philippe, Paulus; Vincent, Leroy; and Graas, Henri, 4,221,832, Cl. 427-319.000.
Century Mfg. Co.: *See*—
Redwine, Michael A., 4,221,370, Cl. 269-323.000.
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Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., 4,221,463, Cl. 350-150.000.
Chamberlin, George P., to Motorola, Inc. Real time capture registers for data processor. 4,222,103, Cl. 364-200.000.
Champion International Corporation: *See*—
Faller, Rudolph A., 4,221,320, Cl. 229-19.000.
Channel, Chelsey B. Rotatable, tiltable and expandable upholstery work table. 4,221,368, Cl. 269-54.300.
Chapman, Michael T., to Gulf Oil Corporation. Ammonium nitrate particulate abatement process. 4,221,770, Cl. 423-396.000.
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., to Precision Dynamics Corporation. Tamper-resistant identification device. 4,221,063, Cl. 40-21.00C.
Chaty, John C.: *See*—
Halstead, Robert W.; and Chaty, John C., 4,221,743, Cl. 568-454.000.
Chem-Farm Inc.: *See*—
Suhrheinrich, Robert, 4,221,667, Cl. 210-304.000.
Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Total synthesis of the utero-evacuant substance D,L-zoapatanol. 4,221,717, Cl. 260-333.000.
Cheng, Fred F.: *See*—
MacPhee, Craig; and Cheng, Fred F., 4,221,782, Cl. 424-127.000.
Cherrington, Martin D. Drilling method and apparatus for large diameter pipe. 4,221,503, Cl. 405-184.000.
Chervenak, Michael C.; and Comolli, Alfred G., to Hydrocarbon Research, Inc. Catalytic hydrogenation process and apparatus with improved vapor liquid separation. 4,221,653, Cl. 208-8.0LE.
Chesapeake and Ohio Railway Company, The: *See*—
Kirwan, George B., 4,221,521, Cl. 414-375.000.
Chevron Research Company: *See*—
Suzuki, Shigeto, 4,221,918, Cl. 560-263.000.
Suzuki, Shigeto, 4,221,921, Cl. 562-603.000.
Woo, Gar L., 4,221,605, Cl. 106-287.240.
Ziman, Stephen D., 4,221,584, Cl. 71-88.000.
Chiba, Ataru: *See*—
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, 4,221,606, Cl. 106-288.00Q.
Chicckine, Sheila. Holder for earrings. 4,221,118, Cl. 63-13.000.
Child, Frank W. Dual action solenoid pump. 4,221,548, Cl. 417-418.000.
Chirino, Agustin M.; and Yost, Gerald H., to Corning Glass Works. Hermetic seals. 4,221,604, Cl. 106-286.500.
Chiu, Aurel: *See*—
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.
Cholin, John M., to Firetek Corporation. Capacitive shift fire detection device. 4,222,045, Cl. 340-628.000.
Christenson, Roger M.: *See*—
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,221,885, Cl. 525-328.000.
Christopher, Gilman O. Adjustable nozzle for crop spraying. 4,221,334, Cl. 239-394.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Ciavattoni, Anthony; Flynn, John J.; and Weber, Theodore, Jr., to Pennwalt Corporation. Panoramic dental X-ray machine employing selectable mode film drive mechanism with shiftable cam followers. 4,221,970, Cl. 250-439.00P.
Ciba-Geigy Aktiengesellschaft: *See*—
Topfl, Rosemarie, 4,221,886, Cl. 525-329.000.
Ciba-Geigy Corporation: *See*—
Drabek, Jozef; Greuter, Hans; and Martin, Pierre, 4,221,812, Cl. 424-304.000.
Ferrini, Pier G., 4,221,806, Cl. 424-275.000.
Kalvoda, Jaroslav, 4,221,786, Cl. 424-241.000.
Rasberger, Michael; and Rody, Jean, 4,221,701, Cl. 260-45.80N.
Rohr, Otto; Pissiotas, Georg; and Boner, Beat, 4,221,581, Cl. 71-70.000.
Schwander, Hansrudolf, 4,221,911, Cl. 544-354.000.
CIR - S.p.A. - Divisione Sasib: *See*—
Cavazza, Roberto, 4,221,518, Cl. 414-46.000.
Citibank, N.A.: *See*—
Berman, James S., 4,221,086, Cl. 52-65.000.
Cities Service Company: *See*—
Dickerson, Theodore, 4,221,607, Cl. 106-304.000.
Greene, Marvin I., 4,221,763, Cl. 422-197.000.
Pabst, Wilfred A.; and Crabbe, David, 4,221,766, Cl. 423-140.000.
Citizen Watch Company Limited: *See*—
Enomoto, Tadao; Koide, Hiroshi; Ito, Nobuo; Kasai, Hidefumi; and Noguchi, Tsutomu, 4,221,112, Cl 368-84.000.
Onda, Mitsuo; and Ichikawa, Singo, 4,221,111, Cl. 368-35.000.
Ciupe, Iuliu: *See*—
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.
Claar, James A.: *See*—
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Clairol Inc.: *See*—
Walter, Henry J.; and Mack, William, 4,221,050, Cl. 30-216.000.
Clampitt, Russell F.; Kalash, Edwin; Schuette, Dennis C.; and Straub, Melvin J., to Minnesota Mining and Manufacturing Company. Automatic film threading mechanism. 4,221,349, Cl. 242-192.000.
Clark, David P.: *See*—
Buuck, Bryce A.; Mihalic, William T.; and Clark, David P., 4,221,199, Cl. 123-90.160.
Clark Equipment Company: *See*—
Kuhn, Patrick; and Schmidt, Donald K., 4,221,353, Cl. 248-292.100.
Clark, Justin S., to Intermountain Health Care; and Primary Children's Medical Center. Non-airtight pulmonary measuring device. 4,221,224, Cl. 128-718.000.
Clark, Justin S.; Wallace, William D.; and Farr, Frederick L., to Intermountain Health Care. Sampling and determination of diffusible chemical substances. 4,221,567, Cl. 23-230.00B.
Clark, Lawrence: *See*—
Burkey, David J.; and Clark, Lawrence, 4,221,758, Cl. 264-225.000.
Clark, Wallace. Hydraulic motor with variable speed. 4,221,552, Cl. 418-48.000.
Clay, Bobby J., to Natmar, Inc. Heat seal machine. 4,221,626, Cl. 156-366.000.
Clemons, Donald G.; and Procyk, Frank J., to Bell Telephone Laboratories, Incorporated. Dynamic RAM organization for reducing peak current. 4,222,112, Cl. 365-189.090.
Cleveland, William K. S.; Webb, Jimmy L.; and Orlando, Charles M., to General Electric Company. Method for dehydrochlorinating 1,1,1-trichloro-2,2-bis(4-hydroxyphenyl)ethane and products obtained therefrom. 4,221,901, Cl. 528-202.000.
Cline, Harvey E.: *See*—
Fielding, John O.; Erikson, Carl A.; Anthony, Thomas R.; Cline, Harvey E.; and Ludke, Siegwalt, 4,221,956, Cl. 219-388.000.
CMI Corporation: *See*—
Swisher, George W., Jr.; and Phillips, John F., 4,221,434, Cl. 299-39.000.
Cmiel, Heinrich: *See*—
Stolzle, Fritz; and Cmiel, Heinrich, 4,221,401, Cl. 280-615.000.
Coach and Car Equipment Corporation: *See*—
Kehl, Norman J., 4,221,396, Cl. 280-1.000.
Cocron, Istvan: *See*—
Lermann, Peter; Cocron, Istvan; Wagensonner, Eduard; Borowski, Kurt; and Huber, Theodor, 4,221,474, Cl. 354-23.00D.
Coetzee, Carel J. F.: *See*—
Louw, Wynand J.; van der Merwe, Douw G.; and Coetzee, Carel J. F., 4,221,980, Cl. 307-255.000.
Cohen, Florence. Heated muff. 4,221,954, Cl. 219-212.000.
Cohnen, Erich, to Beiersdorf Aktiengesellschaft. Hypotensive 2-heterocycloamino-imidazolines. 4,221,798, Cl. 424-258.000.
Cole, William L.; Buckle, Valerie A.; and Bowden, Humphrey G., to Scripto, Inc. Pen nibs. 4,221,493, Cl. 401-199.000.
Coleman, Howard G.: *See*—
Nunlist, Erwin J.; Coleman, Howard G.; and Harrison, Edward S., 4,221,488, Cl. 366-343.000.
Combustion Engineering, Inc.: *See*—
Barger, John J.; Powell, Waylon C.; and Underwood, James R., 4,221,957, Cl. 219-73.200.
Lowrie, Neely E., 4,221,577, Cl. 55-392.000.
Smith, Donald A.; and LaFlesh, Richard C., 4,221,174, Cl. 110-265.000.
Commeyras, Auguste; Blancou, Hubert; and Lantz, Andre, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of derivatives of fluoroalkane-carboxylic and perfluoroalkane-sulfinic acids. 4,221,734, Cl. 260-408.000.

Commissariat a l'Energie Atomique: *See—*
Feutrel, Claude, 4,221,636, Cl. 176-76.000.

Comolli, Alfred G.: *See—*
Chervenak, Michael C.; and Comolli, Alfred G., 4,221,653, Cl. 208-8.0LE.

Comstock, Bluford M., to Scientific Enterprises, Inc. Apparatus for detecting and measuring an electrostatic field. 4,222,007, Cl. 324-458.000.

Conaghan, Bill F. Cover for stored bulk material. 4,221,085, Cl. 52-4.000.

Conciatori, Anthony B.: *See—*
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., 4,221,726, Cl. 260-346.110.

Conde Hinojosa, Jose R.: *See—*
Aranda Lopez, Jose M.; Conde Hinojosa, Jose R.; and Ramos Martos, Juan, 4,221,297, Cl. 209-576.000.

Condon, Michael E.: *See—*
Ondetti, Miguel A.; and Condon, Michael E., 4,221,912, Cl. 546-263.000.

Conner, William O.: *See—*
Vencill, Larry E.; Cruse, Harold R.; and Conner, William O., 4,221,420, Cl. 296-1.00A.

Connolly, James D. Screen welding machine. 4,221,951, Cl. 219-56.000.

Constructions de Clichy: *See—*
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Container Systems Corp.: *See—*
Kupersmit, Julius B., 4,221,302, Cl. 220-4.00F.

Continental Oil Company: *See—*
Wasson, George E., 4,221,570, Cl. 44-10.00K.

Cook, Mary J.; and Hyche, Kenneth W., to Eastman Kodak Company. Heat resistant hot-melt sealant and caulking compound. 4,221,696, Cl. 260-42.460.

Cook, Melvin A. Slurry explosives. 4,221,618, Cl. 149-21.000.

Cook, Ramon J.: *See—*
Bowden, George F.; Grist, Warren W.; and Cook, Ramon J., 4,221,357, Cl. 249-191.000.

Cooper, Adrianus A. G.; and Leopold, Phillip M., to Pepsico, Inc. Sports racket. 4,221,382, Cl. 273-73.00F.

Cooper, George R.; and Nettleton, Raymond W., to Purdue Research Foundation. Spread spectrum apparatus for cellular mobile communication systems. 4,222,115, Cl. 375-1.000.

Cooper, Jamshed R.: *See—*
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,221,543, Cl. 417-22.000.

Copes-Vulcan, Inc.: *See—*
Seger, Fritz O., 4,221,037, Cl. 29-157.10R.

Copping, Leonard G.: *See—*
Garrod, John F.; Greenwood, Douglas; Copping, Leonard G.; and Brookes, Robert F., 4,221,582, Cl. 71-76.000.

Coppola, Gary M.: *See—*
Hardtmann, Goetz E.; and Coppola, Gary M., 4,221,797, Cl. 424-258.000.

Cordiano, Ettore, to Fiat Auto S.p.A. Electronic device for indicating engine speed. 4,221,126, Cl. 73-116.000.

Cornell, Archie R.: *See—*
MacAskill, Robert B., Jr.; and Cornell, Archie R., 4,222,089, Cl. 361-263.000.

Cornell, Ronald G.; Crane, Bently A.; Hartwell, Walter T.; and Williams, John G. Data storage and retrieval structure for a message storage system. 4,221,933, Cl. 179-6.00C.

Corning Glass Works: *See—*
Chirino, Agustin M.; and Yost, Gerald H., 4,221,604, Cl. 106-286.500.
Shoup, Robert D.; and Wein, William J., 4,221,578, Cl. 65-22.000.

Corrigan, Charles E., to Garrett Corporation, The. Laminated airfoil and method for turbomachinery. 4,221,539, Cl. 416-97.00A.

Cort, Joseph H. Method for producing high potency factor VIII. 4,221,780, Cl. 424-101.000.

Cosden Technology, Inc.,: *See—*
Rutledge, Raleigh N.; and Cruson, Bob J., 4,221,836, Cl. 428-220.000.

Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., to Renal Systems, Inc. Bloom pump system. 4,221,543, Cl. 417-22.000.

Cotter, Richard, to Baxter Travenol Laboratories, Inc. Method for determining endotoxin concentration. 4,221,866, Cl. 435-4.000.

Coulombe, Lionel J., to Singer Company, The. Compact upper thread tension device. 4,221,180, Cl. 112-254.000.

Coulter Electronics, Inc.: *See—*
Klimek, Boleslaw M.; and Campanini, Sergio, 4,221,158, Cl. 91-440.000.

Courtot, Louis B., to Glacier Metal Company Limited, The. Centrifugal filter with external service indicator. 4,221,323, Cl. 233-23.00R.

Cousino, Bernard A.; Cousino, Walter E.; and Redmon, John T., to Cousino Impact Corporation. Method of forming expanded metal grids particularly lead grids for storage battery plates. 4,221,032, Cl. 29-2.000.

Cousino Impact Corporation: *See—*
Cousino, Bernard A.; Cousino, Walter E.; and Redmon, John T., 4,221,032, Cl. 29-2.000.

Cousino, Walter E.: *See—*
Cousino, Bernard A.; Cousino, Walter E.; and Redmon, John T., 4,221,032, Cl. 29-2.000.

Couturier, Alain. Vehicle body and chassis straightening apparatus. 4,221,122, Cl. 72-455.000.

Crabbe, David: *See—*
Pabst, Wilfred A.; and Crabbe, David, 4,221,766, Cl. 423-140.000.

Cragoe, Edward J., Jr.; Smith, Robert L.; and Stokker, Gerald E., to Merck & Co., Inc. Substituted 2,2-dioxo-1,2,3-benzoxathiazines. 4,221,790, Cl. 424-246.000.

Crandall, Richard E., to Cascade Corporation. Walkie low-lift truck with tiltable platen and rearwardly foldable load-supporting wheel struts. 4,221,526, Cl. 414-469.000.

Crane, Bently A.: *See—*
Cornell, Ronald G.; Crane, Bently A.; Hartwell, Walter T.; and Williams, John G., 4,221,933, Cl. 179-6.00C.

Crawley, Lantz S.: *See—*
McKenzie, Thomas C.; Crawley, Lantz S.; and Brown, John J., 4,221,715, Cl. 260-244.400.

Crean, Peter A.; and Spencer, Paul R., to Xerox Corporation. Ink jet multiple field electrostatic lens. 4,222,059, Cl. 346-75.000.

Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,221,737, Cl. 260-465.400.

Cronin, Michael J., to Lockheed Aircraft Corporation. Modular panel of tungsten light switches with current limiting indicating, and switching capability. 4,222,039, Cl. 340-381.000.

Crookston, Joseph A. Sheet metal wall module and wall formed therewith. 4,221,093, Cl. 52-269.000.

Cruse, Harold R.: *See—*
Vencill, Larry E.; Cruse, Harold R.; and Conner, William O., 4,221,420, Cl. 296-1.00A.

Cruson, Bob J.: *See—*
Rutledge, Raleigh N.; and Cruson, Bob J., 4,221,836, Cl. 428-220.000.

Cummins Engine Company, Inc.: *See—*
Badgley, Patrick R., 4,221,192, Cl. 123-456.000.

Cunningham, Peter B.; and Smith, James C., to Bell Telephone Laboratories, Incorporated. Method and apparatus for determining the tuned frequency of a digital repeater. 4,221,939, Cl. 179-175.31R.

Curran, Roger J., to Bangor Punta Operations, Inc. Firing mechanism for revolvers. 4,221,065, Cl. 42-65.000.

Cuscurida, Michael; Zimmerman, Robert L.; and Ramey, Bobbie J., deceased (by Ramey, Sara N., executrix), to Texaco Development Corp. Modified diphenylmethane diisocyanates useful in polyurethanes or polyisocyanurates. 4,221,877, Cl. 521-160.000.

Cushman Industries, Incorporated: *See—*
Selden, Boynton, 4,221,160, Cl. 91-471.000.

Cuvelier, Antoine, to Sefram. Recorders. 4,222,057, Cl. 346-33.00R.

Cvijanovich, George B., to Heliotherme, Inc. System and method for collecting energy from the sun. 4,221,210, Cl. 126-445.000.

D. Gottlieb & Co.: *See—*
Krynski, Edward P., 4,221,384, Cl. 273-118.00D.

Dahlin, Rolf: *See—*
Breitholz, Claes; and Dahlin, Rolf, 4,221,499, Cl. 404-117.000.

Daiichi Seiyaku Company, Ltd.: *See—*
Oga, Shiyunichiro; Asano, Kazuo; and Imada, Katsumi, 4,221,723, Cl. 260-345.70R.

Dailey, Frank E., to Kearney & Trecker Corporation. Automatic tool changer for multiple spindle machine tool. 4,221,043, Cl. 29-568.000.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Kawamura, Kimihide; and Horiguchi, Shojiro, 4,221,709, Cl. 260-165.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Maeda, Kiyoshi; and Fujisawa, Kyohei, 4,221,960, Cl. 250-205.000.
Yamada, Mitsuhiko, 4,222,077, Cl. 358-280.000.

Dale, Ralph S.: *See—*
Benson, Gustav E.; and Dale, Ralph S., 4,221,183, Cl. 118-125.000.

Dalens, Marcel; and Haas, Armand, to Societe des Plastiques de Carmaux SCASAR; and Societe Chimique des Charbonnages CdF Chimie. Method for producing antistatic synthetic polymer film, article made thereby, and method of use. 4,221,830, Cl. 427-256.000.

Dammann, Peter: *See—*
Schippers, Heinz; Bauer, Karl; Lenk, Erich; and Dammann, Peter, 4,221,345, Cl. 242-47.000.

Dana Corporation: *See—*
Jones, Charles R.; and Schultz, Donald C., 4,221,279, Cl. 184-11.00R.

Danchilla, Peter G. Vehicle message reminder system. 4,222,028, Cl. 340-52.00D.

Danfoss A/S: *See—*
Hansen, Henning M., 4,222,113, Cl. 367-87.000.

Daniels, Michael J.; and Higginbotham, John D., to Talres Development (N.A.) N.V. Extraction of thaumatin. 4,221,704, Cl. 260-112.00R.

Danielson, Jack B.; and Ingebrigtson, Donald N., to Dow Corning Corporation. Method of hydrolyzing chlorosilanes. 4,221,691, Cl. 260-33.6SB.

Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L. Voice responsive "talking" toy. 4,221,927, Cl. 179-1.0VC.

Date, Nobuaki: *See—*
Aizawa, Hiroshi; Uchidoi, Masanori; Kozuki, Susumu; Date, Nobuaki; Shimizu, Masami; and Takishima, Yoshiyuki, 4,221,476, Cl. 354-38.000.

Daude-Lagrave, Marie-Christine: *See—*
Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge Y.; and Daude-Lagrave, Marie-Christine, 4,221,675, Cl. 252-186.000.

Davidson, Samuel L., to Mastercrafters Corporation. Post storage rack. 4,221,014, Cl. 9-1.100.

Davy International (Oil & Chemicals) Limited: *See*—
Hardwick, William E., 4,221,658, Cl. 210-634.000.

Dawless, Robert K.; Graziano, Robert E.; and Bonarett, Arthur A., to Aluminum Company of America. Fractional crystallization process. 4,221,590, Cl. 75-68.00R.

Dawson, Jeffrey S. Vehicle protective guard. 4,221,410, Cl. 293-21.000.

Dearing, Clarence A., Jr.: *See*—
Stefan, Larry S.; Dearing, Clarence A., Jr.; and Raney, Frank R., 4,221,511, Cl. 407-117.000.

Decker, Edward. Raisin harvesting apparatus. 4,221,665, Cl. 209-247.000.

Dedolph, Richard R., to Gravi-Mechanics Co. Method of making a body of rooting media. 4,221,749, Cl. 264-45.300.

de Graaf, Aart P., to M&T Chemicals Inc. Method for protecting surfaces against fouling by marine organisms. 4,221,839, Cl. 428-413.000.

Del Monte Corporation: *See*—
Ross, Edward E., 4,221,104, Cl. 53-435.000.

Delavarenne, Serge Y.: *See*—
Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge Y.; and Daude-Lagrave, Marie-Christine, 4,221,675, Cl. 252-186.000.

Deleuil, Michel, to Rhone-Poulenc Industries. Pressure compacting of settable gypsum/plaster compositions. 4,221,599, Cl. 106-111.000.

Delgado, Randy D. Drafting instrument. 4,221,055, Cl. 33-418.000.

Dell, Brian: *See*—
Friedman, Joshua; and Dell, Brian, 4,221,994, Cl. 315-224.000.

DEMAG, A.G.: *See*—
Flaig, Heinz; Middeldorf, Martin; and Dietrich, Udo, 4,221,171, Cl. 104-130.000.

De Mesmaeker, Ivan, to BBC, Brown Boveri & Cie. Method and apparatus for the distance-selective fault monitoring of electrical lines. 4,222,085, Cl. 361-80.000.

Demetron Research Corporation: *See*—
Friedman, Joshua; and Dell, Brian, 4,221,994, Cl. 315-224.000.

Dempsey, Gene A.: *See*—
Henderson, William E.; Goering, Jerry B.; and Dempsey, Gene A., 4,221,023, Cl. 19-113.000.

Denisjuk, Nikolai M.: *See*—
Volodko, Leonid V.; Ksenofontov, Mikhail A.; Ostrovskaya, Ljudmila E.; Dzivitskaya, Galina G.; Goretsky, Igor D.; Khoruzhy, Vasily M.; Denisjuk, Nikolai M.; Volokh, Anatoly Y.; and Pogorelsky, Oleg N., 4,221,873, Cl. 521-103.000.

De Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, to Oronzio deNora Impianti Elettrochimici S.p.A. Anionic membranes. 4,221,642, Cl. 204-98.000.

Deserno, Ulrich, to Siemens Aktiengesellschaft. Device for frequency conversion of coherent light. 4,221,981, Cl. 307-425.000.

DeShano, Al. Delivery trailer. 4,221,529, Cl. 414-546.000.

Design Accessories Inc.: *See*—
Anthony, Alfred A., 4,221,293, Cl. 206-494.000.

Detsch, Steven G. Medical cutting instrument. 4,221,222, Cl. 128-305.500.

Deuterium Corporation: *See*—
Spevack, Jerome S., 4,221,774, Cl. 423-580.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Eisenmenger, Edith; Kuhner, Gerhard; Rothbuhr, Lothar; and Schafer, Hans, 4,221,772, Cl. 423-445.000.
Koehler, Wolfgang, 4,221,845, Cl. 428-670.000.

de Vecchis, Michel: *See*—
Dubois, Gilles; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,221,513, Cl. 409-131.000.

Develco, Inc.: *See*—
Opfer, James E.; Pierce, John M.; and Valby, Lawrence E., 4,221,834, Cl. 428-198.000.

Devine Lighting, Incorporated: *See*—
Garcia, Octavio G.; and Lambert, Peter A., 4,222,093, Cl. 362-147.000.

Dewar, John H.: *See*—
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,455, Cl. 339-186.00M.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,456, Cl. 339-223.00R.

Diagnostic Information, Inc.: *See*—
Wang, Shih-Ping; and Robbins, Charles D., 4,221,967, Cl. 250-363.00S.

Diamond, Harvey E. Nozzle with directionally variable outlet. 4,221,336, Cl. 239-428.500.

Diamond Power Specialty Corporation: *See*—
Murdock, Bradley R., 4,221,094, Cl. 52-474.000.

Diamond Shamrock Corporation: *See*—
LaBarre, Ronald L., 4,221,644, Cl. 204-98.000.

Dias, Francisco J.; and Luhleich, Hartmut, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of producing resin solution and a suspension of particles therein for use as a starting material for the manufacture of a coated filler powder for making molds and the like. 4,221,689, Cl. 260-29.300.

Dickerson, Theodore, to Cities Service Company. Calcining effect of synthetic iron oxide. 4,221,607, Cl. 106-304.000.

Dickinson, John D.; and Writer, Philip L., to United States of America, Navy. Intelligent automatic gain control circuit. 4,222,118, Cl. 455-70.000.

DIEHL, Firma: *See*—
Meisner, Alfred; and Arnold, Werner, 4,222,010, Cl. 328-140.000.

Diesch, Robert E.; and Strunc, Gerald R., to Pako Corporation. Paper feed control for automatic photographic paper cutter. 4,221,144, Cl. 83-27.000.

Dietrich, Udo: *See*—
Flaig, Heinz; Middeldorf, Martin; and Dietrich, Udo, 4,221,171, Cl. 104-130.000.

Dillinger, Edward G., to Rohm and Haas Company. Drive and cutting mechanism. 4,221,149, Cl. 83-870.000.

Dimmick, Floyd E., to Thermal-Chem, Inc. Epoxy resin composition and method for making same. 4,221,890, Cl. 525-407.000.

Din, Zia U.: *See*—
Cardenas, Carlos G.; and Din, Zia U., 4,221,742, Cl. 568-393.000.

Dingler, Gerhard. Steel sections for framework panels. 4,221,097, Cl. 52-731.000.

Dirlewanger, Albert: *See*—
Moser, Werner; v.Tein, Volker; Dirlewanger, Albert; Offenbeck, Hans; and Stoeckle, Walter, 4,221,350, Cl. 244-50.000.

DiscoVision Associates: *See*—
Bailey, Jack H.; and Ottaway, Gerald H., 4,222,072, Cl. 358-128.500.

Dittrick, John W.: *See*—
Willis, Brian J.; and Dittrick, John W., 4,221,679, Cl. 252-522.00R.

Dmitrieva, Kamilla S.: *See*—
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Doak, Kenneth W.: *See*—
Fava, Ronald A.; and Doak, Kenneth W., 4,221,880, Cl. 525-92.000.

Doblinger, Heinz, to Hebel Gasbetonwerk GmbH. Process for the production of steam-hardened gas concrete. 4,221,598, Cl. 106-87.000.

Dobrovolsky, Vladimir I.: *See*—
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.

Doerfler, Roger E., to Kelsey Hayes Co. Brake proportioning apparatus. 4,221,437, Cl. 303-6.00C.

Dollar, David L.: *See*—
Scholes, Addison B.; and Dollar, David L., 4,221,185, Cl. 118-634.000.

Dolman, Hendrik; and Kuipers, Johannes, to Duphar International Research, B.V. Composition active against *Pyricularia oryzae*. 4,221,792, Cl. 424-249.000.

Dolman, Hendrik: *See*—
Kuipers, Johannes; and Dolman, Hendrik, 4,221,801, Cl. 424-270.000.

Domazer, Hans-Gunter: *See*—
Tadema, Jan C.; and Domazer, Hans-Gunter, 4,221,342, Cl. 241-79.000.

Domtar Inc: *See*—
Burgess, Norman E. A., 4,221,294, Cl. 206-521.000.

Don Fell Limited: *See*—
Fell, Don R.; and Takeuchi, Seiji, 4,221,296, Cl. 206-600.000.

Donahue, Arnold. Ski pole and snow scraper. 4,221,393, Cl. 280-813.000.

dos Santos, Claudio, to Beehive Machinery, Inc. Method and apparatus for producing a masa product. 4,221,340, Cl. 241-7.000.

Dotson, Samuel C.: *See*—
Mamula, Ronald S.; and Dotson, Samuel C., 4,221,537, Cl. 414-786.000.

Dow Chemical, The: *See*—
Van Heertum, John C.; and Malhotra, Sudarshan K., 4,221,799, Cl. 424-263.000.

Dow Chemical Company, The: *See*—
Baron, Lynne B.; and Lee, George A., 4,221,892, Cl. 525-531.000.
Lee, John M.; and Bauman, William C., 4,221,767, Cl. 423-179.500.
Mott, Charles L.; and Kozakiewicz, Bernie A., 4,221,883, Cl. 525-243.000.
Norman, Paula R.; and Ginter, Sally P., 4,221,861, Cl. 430-529.000.
Pews, R. Garth; and Ash, Mezzie L., 4,221,913, Cl. 546-346.000.
Tsang, Albert C.; and Ainsworth, Oliver C., 4,221,727, Cl. 260-348.370.
Woo, Edmund P., 4,221,895, Cl. 526-270.000.

Dow Corning Corporation: *See*—
Danielson, Jack B.; and Ingebrigtson, Donald N., 4,221,691, Cl. 260-33.6SB.
Johnson, Robert D.; Saam, John C.; and Schmidt, Christine M., 4,221,688, Cl. 260-29.20M.

Drabek, Jozef; Greuter, Hans; and Martin, Pierre, to Ciba-Geigy Corporation. Pesticidal spiropentanecarboxylates. 4,221,812, Cl. 424-304.000.

Drago, James A.; and Savitz, Steven R., to Union Carbide Corporation. Tube guide insert and constraint fittings for compensating rotor. 4,221,322, Cl. 233-23.00R.

Dravo Corporation: *See*—
Saxon, Arthur F., 4,221,764, Cl. 422-268.000.
Schymura, Konrad; and Schafer, Manfred, 4,221,341, Cl. 241-67.000.

Dreher, Karl D.; and Gogarty, William B., to Marathon Oil Company. Retro-viscous fluidic fluid. 4,221,229, Cl. 137-13.000.

Dresser Industries, Inc.: *See*—
Baron, George B.; Thompson, George J.; and Palm, Michael M., 4,221,531, Cl. 414-694.000.

Driffield, John B., deceased: *See—*
Kerr, Howard S.; Kettlewell, John R.; Driffield, John B., deceased; and Driffield, Margaret D., administrator, 4,221,966, Cl. 250-338.000.

Driffield, Margaret D., administrator: *See—*
Kerr, Howard S.; Kettlewell, John R.; Driffield, John B., deceased; and Driffield, Margaret D., administrator, 4,221,966, Cl. 250-338.000.

Dubczak, John A.; and Weary, Marlys E., to Baxter Travenol Laboratories, Inc. Method for determining endotoxin concentration. 4,221,865, Cl. 435-4.000.

Dubois, Gilles; Hulin, Jean-Pierre; and de Vecchis, Michel, to Societe Lignes Telegraphiques et Telephoniques. Method of continuously machining supports for electromagnetic wave guides. 4,221,513, Cl. 409-131.000.

Dubreux, Bernard: *See—*
Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge Y.; and Daude-Lagrave, Marie-Christine, 4,221,675, Cl. 252-186.000.

Dunlop Limited: *See—*
Harvey, Samuel E.; and Pegram, Philip H., 4,221,231, Cl. 137-72.000.

Dunn, Ronald A. Data transmission system. 4,222,052, Cl. 343-112.00R.

Duphar International Research: *See—*
Kuipers, Johannes; and Dolman, Hendrik, 4,221,801, Cl. 424-270.000.

Duphar International Research, B.V.: *See—*
Dolman, Hendrik; and Kuipers, Johannes, 4,221,792, Cl. 424-249.000.

Du Pont de Nemours, E. I., and Company: *See—*
Harris, Alexander T.; Kelly, Thomas J.; and Redwine, Terry W., 4,221,659, Cl. 210-639.000.
Hoeschele, Guenther K., 4,221,703, Cl. 260-45.9NC.
Levitt, George, 4,221,585, Cl. 71-92.000.
Overman, Joseph D.; and Sheeto, Joseph J., Jr., 4,221,863, Cl. 430-567.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active guanidine compounds for inhibiting H-2 histamine receptors. 4,221,802, Cl. 424-273.00B.

Dutton, Anthony E. Multiple segmented chuck jaw. 4,221,391, Cl. 279-123.000.

Dynapac Maskin AB: *See—*
Breitholz, Claes; and Dahlin, Rolf, 4,221,499, Cl. 404-117.000.

Dzivitskaya, Galina G.: *See—*
Volodko, Leonid V.; Ksenofontov, Mikhail A.; Ostrovskaya, Ljudmila E.; Dzivitskaya, Galina G.; Goretsky, Igor D.; Khoruzhy, Vasily M.; Denisjuk, Nikolai M.; Volokh, Anatoly Y.; and Pogorelsky, Oleg N., 4,221,873, Cl. 521-103.000.

E M I Limited: *See—*
Moore, John F., 4,222,104, Cl. 364-414.000.

E. R. Squibb & Sons, Inc.: *See—*
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,221,725, Cl. 260-345.80R.
Ondetti, Miguel A.; and Condon, Michael E., 4,221,912, Cl. 546-263.000.
Wade, Peter C.; Bernstein, Jack; and Haugwitz, Rudiger D., 4,221,796, Cl. 424-256.000.

Eagle-Picher Industries, Inc.: *See—*
Leonard, Ralph A.; and Linhart, Otto C., 4,221,824, Cl. 427-27.000.

Eastman Kodak Company: *See—*
Cook, Mary J.; and Hyche, Kenneth W., 4,221,696, Cl. 260-42.460.
Harvey, Donald M., 4,221,479, Cl. 354-275.000.
Howe, Dennis G.; Thomas, Harold T.; and Lee, James K., 4,222,070, Cl. 358-128.500.
Kiefer, John E.; and Mumpower, Robert C., II, 4,221,226, Cl. 131-267.000.
Schneider, Herbert R., 4,221,329, Cl. 235-458.000.

Eaton Corporation: *See—*
Buuck, Bryce A.; Mihalic, William T.; and Clark, David P., 4,221,199, Cl. 123-90.160.
Larson, Gerald L.; and Kuether, Roger F., 4,221,985, Cl. 310-171.000.
Soeters, Raymond A., Jr., 4,221,200, Cl. 123-90.160.
Soeters, Raymond A., Jr., 4,221,201, Cl. 123-90.160.

Eberle, William J., to General Battery Corporation. Apparatus for dumping and collecting corrosive substances from automotive batteries. 4,221,523, Cl. 414-421.000.

Echevarria, Angel M. Fluid flotation sleep system. 4,221,013, Cl. 5-451.000.

Edmonston, William H. Carburetor. 4,221,747, Cl. 261-44.00B.

Eggensperger, Heinz; Beilfuss, Wolfgang; and Zerling, Wolfgang, to Sterling Drug Inc. Method for disinfecting. 4,221,660, Cl. 210-764.000.

Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Sewing machine with cam selecting device. 4,221,178, Cl. 112-158.00E.

Egyesult Izzolampa es Villamossagi Reszvenytarsasag: *See—*
Kerekes, Bela, 4,221,987, Cl. 313-42.000.

Ehrenberger, Gunter: *See—*
Mobus, Dietmar; Ehrenberger, Gunter; and Jobst, Wolfgang, 4,221,945, Cl. 200-316.000.

Ehrlich, Jimmie L. Utility diaper structure. 4,221,221, Cl. 128-284.000.

Ehrlinger, Wolfgang: *See—*
Hauth, Wolfgang; and Ehrlinger, Wolfgang, 4,222,015, Cl. 333-1.100.

Eichenberger, Werner, to Gebrueder Leopfe AG. Optical filling or weft bobbin feeler. 4,221,242, Cl. 139-273.00A.

Eisenacher, Werner: *See—*
Attinger, Manfred; Niemann, Gert; Makkens, Lothar; Eisenacher, Werner; and Fraubose, Fritz, 4,221,850, Cl. 429-160.000.

Eisenmenger, Edith; Kuhner, Gerhard; Rothbuhr, Lothar; and Schafer, Hans, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Carbon black for lacquers and pigments. 4,221,772, Cl. 423-445.000.

Eiserman, Martin A.; and Huffer, Douglas L., to Eiserman, Martin A. Motor vehicle sleeper. 4,221,424, Cl. 296-146.000.

Eistetter, Klaus, to Byk Gulden Lomberg Chemische Fabrik GmbH. 2-(Optionally-substituted)benzylperhydroazepines for analgesia and lowering blood pressure. 4,221,788, Cl. 424-244.000.

Ekowicki, Robert L., to GTE Sylvania Incorporated. Thermistor assembly. 4,222,024, Cl. 338-22.00R.

Ekstrom, Bertil A.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,221,781, Cl. 424-114.000.

Ekstrom, Regner A., Jr. Differential pressure transducer with strain gauge. 4,221,134, Cl. 73-721.000.

Electric Power Research Institute: *See—*
Stein, Thomas R.; Heck, Roland H.; and Cabal, Albert V., 4,221,654, Cl. 208-15.000.

Elf Union: *See—*
Ronc, Michel; Perrut, Michel; and Valentin, Patrick, 4,221,259, Cl. 165-1.000.

Elfert, Klaus; Wolf, Gerhard D.; Bentz, Francis; and Kunzel, Hans E., to Bayer Aktiengesellschaft. Semipermeable membranes of heterocyclic copolyamides. 4,221,903, Cl. 528-341.000.

Eltra Corporation: *See—*
Hayes, Clyde M., 4,221,046, Cl. 29-596.000.

Emhart Industries, Inc.: *See—*
Oliver, John N.; and Sandler, Louis M., 4,221,125, Cl. 73-61.10R.

Emmett, John C.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,221,802, Cl. 424-273.00B.

Endo, Isao, to Toshiba Silicone Co., Ltd. Room temperature curable composition. 4,221,896, Cl. 528-28.000.

Endress u. Hauser GmbH u. Co.: *See—*
Stock, Don J. R.; and Sartorius, Wilfried, 4,222,016, Cl. 333-24.00R.

Engle, Vencil D.; Marowski, Raymond M.; Pollard, Edward E.; and Pullen, John L., to International Business Machines Corporation. Self aligning paper feed roller assembly. 4,221,489, Cl. 400-636.300.

Enomoto, Tadao; Koide, Hiroshi; Ito, Nobuo; Kasai, Hidefumi; and Noguchi, Tsutomu, to Citizen Watch Company Limited. Electronic watch with illumination device. 4,221,112, Cl. 368-84.000.

Erhardt & Spiess, Werkzeug- und Maschinenbau GmbH & Co.: *See—*
Minder, Emile A., 4,221,142, Cl. 82-36.00R.

Erickson, Wayne K.: *See—*
Hughes, James K.; and Erickson, Wayne K., 4,221,838, Cl. 428-369.000.

Ericson, Richard E., to Albany International Corp. Respiratory exerciser. 4,221,381, Cl. 272-99.000.

Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Printing machine having registering means. 4,221,165, Cl. 101-126.000.

Erikson, Carl A.: *See—*
Fielding, John O.; Erikson, Carl A.; Anthony, Thomas R.; Cline, Harvey E.; and Ludke, Siegwalt, 4,221,956, Cl. 219-388.000.

Erikson, J. Alden; Lewarchik, Ronald J.; and Birkmeyer, William J., to PPG Industries, Inc. Esters of imidazolidinedione-based triepoxides and coating compositions containing same. 4,221,891, Cl. 525-514.000.

ESB International Corp.: *See—*
Qureshi, Nawaz M., 4,221,852, Cl. 429-211.000.

ESB United States, Inc.: *See—*
Qureshi, Nawaz M., 4,221,852, Cl. 429-211.000.

Escher Wyss GmbH: *See—*
Kurtz, Rudiger; and Trudel, Wolfgang, 4,221,635, Cl. 162-343.000.

Eschwey, Helmut; Galinke, Joachim, deceased (by Galinke, Renate, nee Jansen, heir); and Wiemers, Norbert, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Water-dispersed film-forming lacquer containing air-drying alkyd resins and ethylene oxide adducts of hydrophobic compounds. 4,221,685, Cl. 260-22.00A.

Eslinger, Haynes L.; and Payne, James A. Method of manufacturing a foamed core thermoplastic sheet. 4,221,624, Cl. 156-243.000.

Esper, Friedrich J.: *See—*
Friese, Karl-Hermann; Esper, Friedrich J.; and Geier, Heinz, 4,221,650, Cl. 204-195.00S.

Esses, Jack N. Bait harness. 4,221,069, Cl. 43-44.200.

Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,221,729, Cl. 260-396.00N.

Etablissements Caillau: *See—*
Berrede, Remy J., 4,221,030, Cl. 24-274.00R.

Euteco S.p.A.: *See—*
Vargiu, Silvio; and Manzoni, Pierluigi, 4,221,829, Cl. 427-222.000.

Everett, Charles T. Dust collector system for belt sander. 4,221,081, Cl. 51-135.00R.

Everitt, Stanley K., to Solar Saver International. Solar food dryer. 4,221,059, Cl. 34-93.000.

Ex-Cell-O Corporation: *See—*
Kauffman, Ivan L.; and Allen, Robert J., 4,221,162, Cl. 93-36.800.
Nord, Keith W.; Quast, Joseph G.; Williams, William H.; Willmore, Naaman W.; and Benson, Ronald B., 4,221,519, Cl. 414-49.000.

Exel Oy: *See—*
Aho, Yrjo, 4,221,392, Cl. 280-824.000.

Exxon Research & Engineering Co.: *See—*
Brenner, Douglas; and Oswald, Alexis A., 4,221,887, Cl. 525-332.000.
Brois, Stanley J.; and Gutierrez, Antonio, 4,221,720, Cl. 260-343.600.
Huff, Terrence, 4,221,882, Cl. 525-240.000.
Makowski, Henry S.; Bock, Jan; and Lundberg, Robert D., 4,221,712, Cl. 260-23.50A.
Robson, Robert; Swinney, Brian; and Tack, Robert D., 4,221,673, Cl. 252-42.700.

Ezerski, Bruno J.: *See—*
Stoffel, Robert P.; and Ezerski, Bruno J., 4,221,228, Cl. 134-199.000.

Ezoe, Mitsuhiko; and Hosaka, Akio, to Nissan Motor Company, Limited. Fuel injection system for an automotive internal combustion engine equipped with a fuel cut off control signal generator. 4,221,193, Cl. 123-483.000.

Fa. EVG Entwicklungs-u. Verwertungs-Gesellschaft mbH.: *See—*
Ritter, Gerhard; Ritter, Klaus; Gott, Hans; and Ritter, Josef, 4,221,143, Cl. 83-37.000.

Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Fantozzi, Enzo, 4,221,232, Cl. 137-118.000.

Fahnler, Friedrich: *See—*
Humme, Gert; Fahnler, Friedrich; Neuray, Dieter; Ott, Karl-Heinz; and Tacke, Peter, 4,221,879, Cl. 525-66.000.

Falci, Kenneth J.; and Scott, Robert N., to Olin Corporation. Water and color retention treatment for frozen processed shrimp. 4,221,819, Cl. 426-262.000.

Falkenburg, Rudy A.: *See—*
Bullens, Valere G. J.; Pauw, Hermanus; and Falkenburg, Rudy A., 4,221,761, Cl. 422-54.000.

Faller, Rudolph A., to Champion International Corporation. Composite including tray restrained with outer cover. 4,221,320, Cl. 229-19.000.

Fanger, Gene O.; and Brutchen, George W., to Ball Corporation. Photopolymerizable composition with oxalic acid photoinitiator. 4,221,859, Cl. 430-285.000.

Fantozzi, Enzo, to Fabbrica Italiana Magneti Marelli S.p.A. Shut off valve units of damaged sections in pneumatic multi-section braking systems of vehicles. 4,221,232, Cl. 137-118.000.

Fardal, Randolph G., to International Harvester Company. Digital memory depth tillage system. 4,221,266, Cl. 172-4.000.

Farmer, Glen R. Multiple needle cylinder hosiery knitting machine. 4,221,120, Cl. 66-222.000.

Farr, Frederick L.: *See—*
Clark, Justin S.; Wallace, William D.; and Farr, Frederick L., 4,221,567, Cl. 23-230.00B.

Farrell, Michael, to Casematers (Herts & Essex) Limited. Fitting for machines. 4,221,497, Cl. 403-344.000.

Faust, Matthew J.; and Picozzi, James R., to Honeywell Inc. Stable electrolyte for lithium batteries. 4,221,851, Cl. 429-197.000.

Fava, Ronald A.; and Doak, Kenneth W., to Arco Polymers, Inc. Moldable blend of interpolymer of rubber, maleic anhydride and styrene with polyphenylene oxide. 4,221,880, Cl. 525-92.000.

Favrot, Paul, to Constructions de Clichy. Work-tables of grinding machines. 4,221,080, Cl. 51-105.0SP.

Federal Paper Board Company, Inc.: *See—*
Frost, Arthur W., III, 4,221,634, Cl. 162-190.000.

Feichtner, Hanns; and Scheikl, Peter, to Voest-Alpine Aktiengesellschaft. Process and apparatus for firing pellets. 4,221,559, Cl. 432-18.000.

Feldmuhle Aktiengesellschaft: *See—*
Riecke, Kurt; and Land, Ferdinand, 4,221,690, Cl. 260-29.70R.

Felenkovsky, Igor V.: *See—*
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Fell, Don R.; and Takeuchi, Seiji, to Don Fell Limited; Gordon Fell Limited; and Lawrence Fell Limited. Shipping assembly. 4,221,296, Cl. 206-600.000.

Ferrini, Pier G., to Ciba-Geigy Corporation. Novel benzothiopyran derivatives. 4,221,806, Cl. 424-275.000.

Ferro Corporation: *See—*
Zebrowski, Gerald R., 4,221,595, Cl. 106-56.000.

Fesler, John: *See—*
Jenkins, John P.; and Fesler, John, 4,221,316, Cl. 226-35.000.

Fetty, Harold D.: *See—*
Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., 4,221,254, Cl. 152-209.00D.

Feutrel, Claude, to Commissariat a l'Energie Atomique. Grids for bringing about the spacing of a group of sheathed fuel rods in a nuclear reactor. 4,221,636, Cl. 176-76.000.

Fiat Auto S.p.A.: *See—*
Cordiano, Ettore, 4,221,126, Cl. 73-116.000.

Fidelity-Research, Inc.: *See—*
Ikeda, Isamu, 4,221,937, Cl. 179-100.41M.

Fiege, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of arylglyoxylic acids. 4,221,719, Cl. 260-340.50R.

Fielding, John O.; Erikson, Carl A.; Anthony, Thomas R.; Cline, Harvey E.; and Ludke, Siegwalt, to General Electric Company. Apparatus for practising temperature gradient zone melting. 4,221,956, Cl. 219-388.000.

Finden, Per O., to Sentralinstitutt for Industriell Forskning. Steerable and motor-driven undercarriage. 4,221,273, Cl. 180-6.480.

Finelli, Anthony F.; and Kimball, Michael E., to Goodyear Tire & Rubber Company, The. Treated polyetherurethane photopolymer composition containing triaryl phosphine. 4,221,646, Cl. 204-159.190.

Finley, Donald W.; and Lewis, Robert B., to Western Electric Company, Incorporated. Printed circuit board. 4,221,925, Cl. 174-68.500.

Finnegan, George E. Lamp failure detection apparatus. 4,222,047, Cl. 340-641.000.

Firestone Tire & Rubber Company, The: *See—*
Beckman, Joseph A., 4,221,608, Cl. 106-307.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,898, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,899, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,900, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,904, Cl. 528-363.000.

Firetek Corporation: *See—*
Cholin, John M., 4,222,045, Cl. 340-628.000.

Fischer, Artur. Arrangement for mounting a flexible film or the like. 4,221,028, Cl. 24-245.00R.

Fischer, Georg: *See—*
Heim, Richard; and Fischer, Georg, 4,221,533, Cl. 414-744.00B.
Hoffmann, Johann; Heim, Richard; and Fischer, Georg, 4,221,522, Cl. 414-417.000.

Fischer & Porter Company: *See—*
Shine, Carl, 4,221,615, Cl. 148-120.000.

Fisher, William E. Erect image telescope optical system. 4,221,459, Cl. 350-55.000.

Fisons Limited: *See—*
Harper, Douglas C.; Robinson, Norman; and Janikowski, Stanislaw M., 4,221,769, Cl. 423-320.000.
Haynes, Harold G.; and Taylor, Robert W., 4,221,718, Cl. 260-340.50R.

Flaig, Heinz; Middeldorf, Martin; and Dietrich, Udo, to DEMAG, A.G. Direction shift control for connected vehicle undercarriages. 4,221,171, Cl. 104-130.000.

Fleischhacker, James E.; Roberts, Lincoln E.; and Wasserlein, Henry G., Jr., to AMP Incorporated. Cross connect distribution system and apparatus. 4,221,445, Cl. 339-18.00R.

Flemming, John P. W., to Western Electric Company, Incorporated. Articulated robot arm and method of moving same. 4,221,997, Cl. 318-574.000.

Flinchbaugh, Henry K., to Flinchbaugh/Murray Corporation. Apparatus and method for lifting the handicapped. 4,221,011, Cl. 5-89.000.

Flinchbaugh/Murray Corporation: *See—*
Flinchbaugh, Henry K., 4,221,011, Cl. 5-89.000.

Floyd, Edward D.: *See—*
Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., 4,221,053, Cl. 33-174.00L.

Flynn, John J.: *See—*
Ciavattoni, Anthony; Flynn, John J.; and Weber, Theodore, Jr., 4,221,970, Cl. 250-439.00P.

FMC Corporation: *See—*
Lochte, Glen E.; and Horn, Charles E., 4,221,408, Cl. 285-276.000.
Woods, Quentin T., 4,221,101, Cl. 53-79.000.

Foerster, Peter H. Machine for collating sheet material. 4,221,372, Cl. 270-58.000.

Foldes, Peter, to RCA Corporation. Rotatable polarization duplexer. 4,222,017, Cl. 333-122.000.

Ford Motor Company: *See—*
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,455, Cl. 339-186.00M.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,456, Cl. 339-223.00R.
Heiney, Elmer T., III; Merchant, Stanley R.; and Green, Wells L., 4,222,026, Cl. 338-34.000.

Ford, William D.: *See—*
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,221,677, Cl. 252-455.00Z.

Forest Medical Products, Inc.: *See—*
Madsen, Lamar, 4,221,238, Cl. 137-627.500.

Forsgren, Ulf E.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,221,781, Cl. 424-114.000.

Fortune, William S. Vacuum desoldering tool and tool cleaner system. 4,221,017, Cl. 15-344.000.

Fortune, William S. Vacuum operated holding fixture. 4,221,356, Cl. 248-363.000.

Foxboro Company, The: *See—*
Olsen, Everett O.; and Nudd, Howard W., Jr., 4,221,133, Cl. 73-704.000.

Fraige, Richard. Water mattress and method of manufacture. 4,221,625, Cl. 156-251.000.

Frank, Robert G., to PPG Industries, Inc. Glass sheet vacuum molding apparatus with uniform release means. 4,221,580, Cl. 65-273.000.

Franke, Kurt, to Siemens Aktiengesellschaft. X-Ray diagnostic generator comprising an inverter supplying the high voltage transformer. 4,221,968, Cl. 250-402.000.

Franssen, Nico V.; and Geelen, Mathias H., to U.S. Philips Corporation. Noise reduction circuit for stereo signals. 4,221,928, Cl. 179-1.0GM.

Frantzen, John J., to Minnesota Micro Metal, Inc. Abrasive tool. 4,221,084, Cl. 51-392.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,221,169, Cl. 104-12.000.
Fraubose, Fritz: *See*—
Attinger, Manfred; Niemann, Gert; Makkens, Lothar; Eisenacher, Werner; and Fraubose, Fritz, 4,221,850, Cl. 429-160.000.
Frazier, Giles R., to International Business Machines Corporation. Velocity tolerant decoding technique. 4,222,080, Cl. 360-40.000.
Freedman, M. David: *See*—
Mueller, Paul A.; Hartz, John R.; Pawlowski, Elaine D.; and Freedman, M. David, 4,221,974, Cl. 250-563.000.
Freeman, Carl D.; and Grover, Melvin G., to Logan Farm Equipment Co., Inc. Seed planting machines. 4,221,305, Cl. 221-131.000.
Freese, Gary P.; and Trayler, Robert J., to Caterpillar Tractor Co. Slide rail assembly for a work vehicle. 4,221,268, Cl. 172-805.000.
Freitag, Dieter: *See*—
Adelmann, Siegfried; Margotte, Dieter; Rosenkranz, Hans J.; Vernaleken, Hugo; Nouvertne, Werner; and Freitag, Dieter, 4,221,645, Cl. 204-159.140.
Frentzel, Herman E.: *See*—
Brown, James A.; and Frentzel, Herman E., 4,221,515, Cl. 410-32.000.
Frey, Raymond. Centrifuge with variable angle of attack. 4,221,324, Cl. 233-26.000.
Friedman, Joshua; and Dell, Brian, to Demetron Research Corporation. Photo curing light source. 4,221,994, Cl. 315-224.000.
Friese, Karl-Hermann; Esper, Friedrich J.; and Geier, Heinz, to Robert Bosch GmbH. Solid electrolyte oxygen sensors. 4,221,650, Cl. 204-195.00S.
Fritz Wagener GmbH: *See*—
Wagener, Claus P., 4,221,453, Cl. 339-149.00R.
Fritzsche Dodge & Olcott, Inc.: *See*—
Willis, Brian J.; and Dittrick, John W., 4,221,679, Cl. 252-522.00R.
Frobose, James W., to Jasper Corporation. Push button adjuster for chair backrest. 4,221,430, Cl. 297-353.000.
Frost, Arthur W., III, to Federal Paper Board Company, Inc. Method of treating papermaking white water. 4,221,634, Cl. 162-190.000.
Frumkin, Felix M.: *See*—
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; and Zvenigorodsky, Evgeny I., 4,221,506, Cl. 406-30.000.
Frustagli, Stefano: *See*—
Boscardin, Lucio; Frustagli, Stefano; and Veronese, Alfredo, 4,221,492, Cl. 401-184.000.
Fuji Photo Film Co., Ltd.: *See*—
Hirose, Takeshi; and Okumura, Akia, 4,221,860, Cl. 430-379.000.
Hoshi, Yoshiyuki; and Matsukawa, Hiroharu, 4,221,710, Cl. 260-17.300.
Naito, Kenji; Ohe, Keitaro; and Tsuji, Nobuo, 4,221,862, Cl. 430-536.000.
Okutsu, Eiichi; Akimura, Yoshitaka; Takada, Shunji; and Mifune, Hiroyuki, 4,221,857, Cl. 430-264.000.
Shiba, Keisuke; and Kobayashi, Kesanao, 4,221,858, Cl. 430-266.000.
Shimizu, Shigehisa; and Mizutani, Shigemitsu, 4,221,145, Cl. 83-71.000.
Fujii, Motoji: *See*—
Seki, Tatsujiro; Fujii, Motoji; Hayashi, Motoshige; and Tsubone, Masahiro, 4,221,621, Cl. 156-78.000.
Fujino, Haruo: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Fujino, Haruo, 4,221,197, Cl. 123-316.000.
Fujisawa, Kyohei: *See*—
Maeda, Kiyoshi; and Fujisawa, Kyohei, 4,221,960, Cl. 250-205.000.
Fujisawa, Tamotsu: *See*—
Kondo, Kiyoshi; Tsunemoto, Daiei; and Fujisawa, Tamotsu, 4,221,915, Cl. 549-78.000.
Fujiwara, Hiroshi: *See*—
Minagawa, Motomobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,221,700, Cl. 260-45.7PH.
Fukada, Minoru; Sakaguchi, Zen; and Hasegawa, Kenichi, to Hiraoka Kogyo Kabushiki Kaisha. Apparatus for controlling the feed of yarn. 4,221,317, Cl. 226-188.000.
Fukuda, Yutaka, to Sony Corporation. Speaker system. 4,221,929, Cl. 179-1.00E.
Fukumura, Tohru: *See*—
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, to Toyo Ink Manufacturing Co., Ltd. Phthalocyanine pigment compositions. 4,221,606, Cl. 106-288.00Q.
Fushimi, Akihiro, to Pioneer Electronic Corporation. Light chopping disc for a pulse generator. 4,221,963, Cl. 250-231.0SE.
Futaba, Takeshi, to Koyojidoki Kabushiki Kaisha. Ball nut type steering gear. 4,221,137, Cl. 74-216.300.
G.D. Societa per Azioni: *See*—
Seragnoli, Enzo, 4,221,287, Cl. 198-418.000.
Gabriel, Anthony P.; and Lawler, John D., to General Cable Corporation. End seals for pre-connectorized telephone cables. 4,221,924, Cl. 174-10.000.
Gaertner, Van R.; and Phillips, Wendell G., to Monsanto Company. N-Phosphonomethylglycinonitrile and certain derivatives thereof. 4,221,583, Cl. 71-86.000.
Gaidis, James M.: *See*—
Rosenberg, Arnold M.; and Gaidis, James M., 4,221,628, Cl. 156-577.000.
Galer, Herbert W.; and Menefee, Charles M., to United States Steel Corporation. Pail bail holder. 4,221,286, Cl. 198-377.000.
Galinke, Joachim, deceased: *See*—
Eschwey, Helmut; Galinke, Joachim, deceased; and Wiemers, Norbert, 4,221,685, Cl. 260-22.00A.
Galinke, Renate, nee Jansen, heir: *See*—
Eschwey, Helmut; Galinke, Joachim, deceased; and Wiemers, Norbert, 4,221,685, Cl. 260-22.00A.
Galkin, Nikolai P.: *See*—
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.
Gallagher, H. Dan. Multiple pitch animal call. 4,221,075, Cl. 46-178.000.
Ganellin, Charon R.: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,221,802, Cl. 424-273.00B.
Ganse, Robert G.; and Nikolaus, Harold W., to Armstrong Cork Company. Window insulation system. 4,221,091, Cl. 52-202.000.
Ganz, Samuel. Canine waste disposal apparatus. 4,221,415, Cl. 294-1.0BA.
Ganz, Walter C., to Walgan Corp. Pen construction. 4,221,491, Cl. 401-33.000.
Garcia, Alfred B.: *See*—
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,221,868, Cl. 435-56.000.
Garcia, Octavio G.; and Lambert, Peter A., to Devine Lighting, Incorporated. Light mounting fixture assembly. 4,222,093, Cl. 362-147.000.
Garodnick, Joseph: *See*—
Stern, Joseph L.; and Garodnick, Joseph, 4,222,067, Cl. 358-118.000.
Garrett Corporation, The: *See*—
Corrigan, Charles E., 4,221,539, Cl. 416-97.00A.
Garrett, William L. Synthetic seaweed. 4,221,500, Cl. 405-24.000.
Garrod, John F.; Greenwood, Douglas; Copping, Leonard G.; and Brookes, Robert F., to Boots Company Limited, The. Plant growth regulating compounds, compositions and methods. 4,221,582, Cl. 71-76.000.
Gas Research Institute: *See*—
Jalics, Stephen M., 4,221,557, Cl. 431-22.000.
Gas Spring Corporation: *See*—
Smith, Lawther O., 4,221,367, Cl. 267-64.00R.
Gaster, Laramie M., to Beecham Group Limited. Preparation of 4(6'-methoxy-2'-naphthyl)butan-2-one. 4,221,741, Cl. 568-314.000.
Gaudion, Thomas J.: *See*—
Wunder, John E.; Hronek, George; and Gaudion, Thomas J., 4,221,261, Cl. 165-74.000.
Gausman, Elmer J., Jr., to A. O. Smith Corporation. Three-phase two speed A.C. motor. 4,221,999, Cl. 318-704.000.
Gayler, Ronald: *See*—
Hardwick, William H.; and Gayler, Ronald, 4,221,680, Cl. 252-301.10W.
Gebrueder Leopfe AG: *See*—
Eichenberger, Werner, 4,221,242, Cl. 139-273.00A.
Geelen, Mathias H.: *See*—
Franssen, Nico V.; and Geelen, Mathias H., 4,221,928, Cl. 179-1.0GM.
Geier, Heinz: *See*—
Friese, Karl-Hermann; Esper, Friedrich J.; and Geier, Heinz, 4,221,650, Cl. 204-195.00S.
Geisen, Karl: *See*—
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Pfaff, Werner, 4,221,815, Cl. 424-319.000.
Gellon, Joseph: *See*—
Slonina, Jean-Pierre; Girard, Pierre; Boucher, Jacques; and Gellon, Joseph, 4,221,622, Cl. 156-93.000.
Geltenpoth, Ulrich: *See*—
Mnilk, Reinhold; Kurreck, Manfred; Geltenpoth, Ulrich; and Keil, Manfred, 4,221,760, Cl. 264-524.000.
General Atomic Company: *See*—
Brown, Lloyd C., 4,221,182, Cl. 118-716.000.
General Battery Corporation: *See*—
Eberle, William J., 4,221,523, Cl. 414-421.000.
General Cable Corporation: *See*—
Gabriel, Anthony P.; and Lawler, John D., 4,221,924, Cl. 174-10.000.
General Dynamics Corporation: *See*—
Nicoloff, George B.; and Kerr, Clark, Jr., 4,221,230, Cl. 137-15.100.
General Electric Company: *See*—
Acres, Ronald C.; Gravitt, Robert D.; and Roth, Robert H., 4,221,542, Cl. 416-220.00R.
Cleveland, William K. S.; Webb, Jimmy L.; and Orlando, Charles M., 4,221,901, Cl. 528-202.000.
Fielding, John O.; Erikson, Carl A.; Anthony, Thomas R.; Cline, Harvey E.; and Ludke, Siegwalt, 4,221,956, Cl. 219-388.000.
Greskovich, Charles D.; Klug, Frederic J.; and Pasco, Wayne D., 4,221,594, Cl. 106-40.00R.
Hallgren, John E., 4,221,920, Cl. 562-406.000.
Haught, Thomas P.; and Johnson, Dale F., 4,221,998, Cl. 318-661.000.
Jaquiss, Donald B. G.; Scott, Steven W.; Vaughn, Howard A., Jr.; and Williams, Joseph B., 4,221,728, Cl. 260-37.0SB.
Olander, Walter K., 4,221,735, Cl. 260-429.00C.
Pasco, Wayne D.; and Klug, Frederic J., 4,221,748, Cl. 264-43.000.
Phillipp, Robert G.; Hellman, Wayne R.; Matz, Wayne C.; and Bacharowski, Walter, Jr., 4,221,993, Cl. 315-73.000.

Schaap, David J.; and Watrous, Donald L., 4,222,037, Cl. 340-309.100.
Sidebottom, Donald L.; and Stottmann, Richard L., 4,221,129, Cl. 73-336.500.
Takekoshi, Tohru, 4,221,897, Cl. 528-125.000.
White, Dwain M., 4,221,881, Cl. 525-109.000.

General Foods Corporation: *See*—
Hunt, Guilbert M., 4,221,291, Cl. 206-222.000.

General Motors Corporation: *See*—
Graeser, Joseph H., Jr.; Natoli, Richard A.; and Adkins, Robert J., 4,222,056, Cl. 343-767.000.
Hammar, Richard H.; and Harvey, Douglas J., 4,221,854, Cl. 429-234.000.
Mobus, Dietmar; Ehrenberger, Gunter; and Jobst, Wolfgang, 4,221,945, Cl. 200-316.000.
Raver, Louis J.; and Bricker, Gene D., 4,221,982, Cl. 310-59.000.
Rice, Hal H., 4,221,596, Cl. 106-69.000.
Roth, Norman J., 4,221,940, Cl. 200-61.45R.
Sundeen, Arthur R., 4,222,002, Cl. 322-86.000.

Genovese, John M., to GTE Sylvania Wiring Devices Incorporated. Rocker switch having improved contact-operating means. 4,221,941, Cl. 200-67.00A.

George Fischer Limited: *See*—
Pavlovsky, Rudolf, 4,221,514, Cl. 409-291.000.

Gerardi, Richard E.: *See*—
Campbell, James R., 4,221,394, Cl. 280-12.00H.

Gergely, William, Jr.: *See*—
Morrison, Douglas I.; and Gergely, William, Jr., 4,221,375, Cl. 271-127.000.

Gerigk, Gunter: *See*—
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,221,821, Cl. 426-420.000.

Getson, John C.; and Neuroth, Charles G. Composition free of surface cure inhibition and method for preparing the same. 4,221,693, Cl. 260-37.05B.

Ghyselinck, Philippe: *See*—
Hubert, Guy; and Ghyselinck, Philippe, 4,221,759, Cl. 264-520.000.

Gibson, Alan F.: *See*—
Hogan, John C.; and Gibson, Alan F., 4,221,591, Cl. 75-86.000.

Gilbert, Everett E., to United States of America, Army. Preparation of hexanitrostilbene. 4,221,745, Cl. 568-931.000.

Gilbert, Everett E., to United States of America, Army. Preparation of hexanitrostilbene. 4,221,746, Cl. 568-931.000.

Gilbos, Georges E., to Textielmachinefabriek. Device for deposition of loops of yarn on a conveyor belt of a yarn processing chamber. 4,221,031, Cl. 28-281.000.

Gillette Company, The: *See*—
Malm, Curtis L., 4,221,490, Cl. 401-29.000.

Giner-Sorolla, Alfredo, to Newport Pharmaceuticals International, Inc.; and Sloan-Kettering Institute for Cancer Research. 9-(Hydroxy alkyl)purines. 4,221,910, Cl. 544-265.000.

Ginter, Sally P.: *See*—
Norman, Paula R.; and Ginter, Sally P., 4,221,861, Cl. 430-529.000.

Girard, Pierre: *See*—
Slonina, Jean-Pierre; Girard, Pierre; Boucher, Jacques; and Gellon, Joseph, 4,221,622, Cl. 156-93.000.

Giuffre, Luigi: *See*—
De Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,221,642, Cl. 204-98.000.

Giusti, Giampiero. Device for dampening the force exerted on a strip material during entrainment. 4,221,318, Cl. 226-195.000.

Glacier Metal Company Limited, The: *See*—
Courtot, Louis B., 4,221,323, Cl. 233-23.00R.

Glaenzer Spicer: *See*—
Mangiavacchi, Jacques, 4,221,119, Cl. 64-17.00R.

Glass, James L., to Singer Company, The. Circular saw with improved base plate adjustment. 4,221,051, Cl. 30-377.000.

Global Marine, Inc.: *See*—
Person, Abraham; and Wetmore, Sherman B., 4,221,504, Cl. 405-303.000.

Globe-Union Inc.: *See*—
Inkmann, Mark S., 4,221,847, Cl. 429-70.000.

Godart, Joseph-Raoul L. G. G., to Ateliers J. Hanrez S.A. Apparatus for handling a cover of a steam generator in an electro-nuclear station. 4,221,418, Cl. 294-90.000.

Godejahn, Gordon C., Jr.; and Heimbigner, Gary L., to Rockwell International Corporation. Self-alignment of gate contacts at local or remote sites. 4,221,044, Cl. 29-571.000.

Godejahn, Gordon C., Jr., to Rockwell International Corporation. Self-aligned contacts in an ion implanted VLSI circuit. 4,221,045, Cl. 29-571.000.

Goering, Jerry B.: *See*—
Henderson, William E.; Goering, Jerry B.; and Dempsey, Gene A., 4,221,023, Cl. 19-113.000.

Gogarty, William B.: *See*—
Dreher, Karl D.; and Gogarty, William B., 4,221,229, Cl. 137-13.000.

Gonzalez, Reymundo. Hoop toy. 4,221,074, Cl. 46-47.000.

Good, Lewis D. Method for making pellet for charging furnaces. 4,221,040, Cl. 29-403.200.

Goodall, Donald T. Pouring spout. 4,221,308, Cl. 222-470.000.

Goodrich, Edward W., to Hawthorne Industries, Inc. Passive triac output asymmetry detector. 4,222,087, Cl. 361-104.000.

Goodyear Tire & Rubber Company, The: *See*—
Finelli, Anthony F.; and Kimball, Michael E., 4,221,646, Cl. 204-159.190.
Kell, Ralph W., 4,221,272, Cl. 180-190.000.
Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., 4,221,254, Cl. 152-209.00D.

Goran, Leo, Jr. Atomizing apparatus. 4,221,331, Cl. 239-121.000.

Gordon Fell Limited: *See*—
Fell, Don R.; and Takeuchi, Seiji, 4,221,296, Cl. 206-600.000.

Gordos, Ambrose L. Automotive lifting device. 4,221,528, Cl. 414-540.000.

Goretsky, Igor D.: *See*—
Volodko, Leonid V.; Ksenofontov, Mikhail A.; Ostrovskaya, Ljudmila E.; Dzivitskaya, Galina G.; Goretsky, Igor D.; Khoruzhy, Vasily M.; Denisjuk, Nikolai M.; Volokh, Anatoly Y.; and Pogorelsky, Oleg N., 4,221,873, Cl. 521-103.000.

Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.

Gott, Hans: *See*—
Ritter, Gerhard; Ritter, Klaus; Gott, Hans; and Ritter, Josef, 4,221,143, Cl. 83-37.000.

Gould Inc.: *See*—
Bucci, Giuseppe D.; and Bolstad, James D., 4,221,123, Cl. 73-38.000.
Maldava, Ojars, 4,221,235, Cl. 137-614.040.
Tisone, Thomas C.; and Bolker, Barry F. T., 4,221,649, Cl. 204-192.00D.

Graas, Henri: *See*—
Philippe, Paulus; Vincent, Leroy; and Graas, Henri, 4,221,832, Cl. 427-319.000.

Graeser, Joseph H., Jr.; Natoli, Richard A.; and Adkins, Robert J., to General Motors Corporation. Slot antenna lead connecting apparatus. 4,222,056, Cl. 343-767.000.

Graham, Neil B. Pharmaceutical composition for treating tropical diseases. 4,221,779, Cl. 424-78.000.

Grapha-Holding AG: *See*—
Muller Hans, 4,221,373, Cl. 270-86.000.

Graupner, Werner; Oberlack, Heinz; and Welling, Hermann-Josef, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process and apparatus for machine washing and cleaning with low-phosphate or phosphate-free washing solutions. 4,221,565, Cl. 8-137.000.

Gravi-Mechanics Co.: *See*—
Dedolph, Richard R., 4,221,749, Cl. 264-45.300.

Gravitt, Robert D.: *See*—
Acres, Ronald C.; Gravitt, Robert D.; and Roth, Robert H., 4,221,542, Cl. 416-220.00R.

Graziano, Robert E.: *See*—
Dawless, Robert K.; Graziano, Robert E.; and Bonarett, Arthur A., 4,221,590, Cl. 75-68.00R.

Green, Wells L.: *See*—
Heiney, Elmer T., III; Merchant, Stanley R.; and Green, Wells L., 4,222,026, Cl. 338-34.000.

Greene, Marvin L., to Cities Service Company. Multi tube high pressure, high temperature reactor. 4,221,763, Cl. 422-197.000.

Greenwald, Harry; and Lambiris, Christos, to Walter Kidde & Company, Inc. Coin chute to accommodate various coin slides having differently sized coins and coin combinations. 4,221,285, Cl. 194-1.00G.

Greenwood, Douglas: *See*—
Garrod, John F.; Greenwood, Douglas; Copping, Leonard G.; and Brookes, Robert F., 4,221,582, Cl. 71-76.000.

Gref, Hans; Voss, Karl; and Wasser, Willi, to AGFA-Gevaert AG. Casting block of stable shape. 4,221,184, Cl. 118-412.000.

Gregory, Ralph R.; and Benesh, Peter. Headpiece (heat-support) having adjustable pads. 4,221,213, Cl. 128-70.000.

Greskovich, Charles D.; Klug, Frederic J.; and Pasco, Wayne D., to General Electric Company. Material composition for fired ceramic articles having a high degree of porosity and crushability characteristics. 4,221,594, Cl. 106-40.00R.

Greten, Berndt: *See*—
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,221,950, Cl. 219-10.810.

Greuter, Hans: *See*—
Drabek, Jozef; Greuter, Hans; and Martin, Pierre, 4,221,812, Cl. 424-304.000.

Grimaldo, Samuel, to American Machine & Hydraulics Inc. Foot control for hydraulic valve. 4,221,359, Cl. 251-295.000.

Grimes, George R., deceased (by Grimes, Mary E., executrix), to Amax Inc. Oxidation roasting of ore. 4,221,588, Cl. 75-7.000.

Grimes, Mary E., executrix: *See*—
Grimes, George R., deceased, 4,221,588, Cl. 75-7.000.

Grimova, Jaroslava; Nemecek, Oldrich; Kuchar, Miroslav; and Brunova, Bohumila, to SPOFA, United Pharmaceutical Works. Antiinflammatory substituted phenylacetic acids. 4,221,919, Cl. 562-465.000.

Grisar, J. Martin, to Richardson-Merrell Inc. Novel antihypertensive agent. 4,221,808, Cl. 424-278.000.

Grist, Warren W.: *See*—
Bowden, George F.; Grist, Warren W.; and Cook, Ramon J., 4,221,357, Cl. 249-191.000.

Groen, Marinus B.: *See*—
Zeelen, Filippus J.; and Groen, Marinus B., 4,221,713, Cl. 260-239.55R.

Groetschel, Karl M. Method of and apparatus for preselecting operation of television or radio receiving and recording apparatus. 4,222,069, Cl. 358-127.000.

Grosser, Werner, to Karl Schmidt GmbH. Three-point safety belt. 4,221,403, Cl. 280-806.000.

Groupement Atomique Alsacienne Atlantique: *See*—
Malaval, Claude, 4,221,637, Cl. 176-86.00L.

Grover, Melvin G.: *See*—
Freeman, Carl D.; and Grover, Melvin G., 4,221,305, Cl. 221-131.000.

Groves, Stanley E., to Motorola, Inc. Digital logic for separating data and clock in Manchester-encoded data. 4,222,116, Cl. 375-55.000.

Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering lecithin. 4,221,784, Cl. 424-199.000.

Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, to BASF Aktiengesellschaft. Brown to violet substituted phenyl-substituted anilino azo dyes. 4,221,711, Cl. 260-207.100.

Grutter, William G. Floor joist machine. 4,221,246, Cl. 144-198.00R.

GTE Automatic Electric Laboratories Incorporated: *See*—
Jameel, Khaja M.; and Koppensteiner, James V., 4,222,020, Cl. 335-153.000.

GTE Products Corporation: *See*—
Bruskotter, Charles B.; and Hamilton, David R., 4,221,676, Cl. 252-301.60F.
Mitchell, Robert B.; and Swank, Harry R., 4,222,075, Cl. 358-246.000.
Speigel, Kenneth, 4,221,991, Cl. 313-481.000.

GTE Sylvania Incorporated: *See*—
Ekowicki, Robert L., 4,222,024, Cl. 338-22.00R.

GTE Sylvania Wiring Devices Incorporated: *See*—
Genovese, John M., 4,221,941, Cl. 200-67.00A.

Gudorf, James L., to Mead Corporation, The. Charge plate with conductive pads and method of manufacture. 4,222,058, Cl. 346-75.000.

Gudze, Arnold A.: *See*—
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Guerder, Pierre; and Ranson, Andre, to Saint-Gobain Industries. Continuous production of synthetic silica doped with fluorine. 4,221,825, Cl. 427-34.000.

Guest, John H., to Metal Closures Limited. Method and apparatus for applying closures to containers. 4,221,105, Cl. 53-488.000.

Guillermin, Rene; Joly, Jean; and Puthon, Joseph, to Rhone-Poulenc-Textile. Pile textile article and process for preparation. 4,221,833, Cl. 428-92.000.

Gulf Oil Corporation: *See*—
Chapman, Michael T., 4,221,770, Cl. 423-396.000.

Gurtler, Richard W., to Motorola, Inc. Liquid crystal memory device and method of utilizing same. 4,221,471, Cl. 350-331.00R.

Gutierrez, Antonio: *See*—
Brois, Stanley J.; and Gutierrez, Antonio, 4,221,720, Cl. 260-343.600.

Guzzetta, Joseph A.; Osborn, William P.; and King, Terance M., to AMI Industries, Inc. Brick dehacker and stacker. 4,221,517, Cl. 414-34.000.

H. J. Langen & Sons Ltd.: *See*—
Langen, Marinus J. M., 4,221,107, Cl. 53-575.000.
Langen, Marinus J. M.; and Strauss, Edgars H., 4,221,321, Cl. 229-54.00R.

Haaker, Lester W.; and Jelatis, Demetrius G., to Central Research Laboratories, Inc. Master-slave manipulator. 4,221,516, Cl. 414-5.000.

Haas, Armand: *See*—
Dalens, Marcel; and Haas, Armand, 4,221,830, Cl. 427-256.000.

Haas, Robert G. Carbon monoxide detector and deactivating mechanism. 4,221,206, Cl. 123-198.0DC.

Haase, Georg: *See*—
Jager, Jurgen; and Haase, Georg, 4,221,019, Cl. 15-368.000.

Haataja, Bruce A.; and Lund, Anders E., to Michigan Technological University, Board of Control of. Articles molded from papermill sludge. 4,221,751, Cl. 264-119.000.

Haba, Hiroshi: *See*—
Matsumoto, Takehiko; and Haba, Hiroshi, 4,222,121, Cl. 455-164.000.

Habu, Takeshi: *See*—
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,221,864, Cl. 430-572.000.

Hadden, John W.: *See*—
Simon, Lionel N.; and Hadden, John W., 4,221,794, Cl. 424-253.000.
Simon, Lionel N.; and Hadden, John W., 4,221,909, Cl. 544-265.000.

Haertenberger, Ludolf: *See*—
Koch, Harald; Haertenberger, Ludolf; and Hanoefner, Anton, 4,221,374, Cl. 271-4.000.

Hafele, Joseph C.; and McCornack, John C., to Caterpillar Tractor Co. Liquid cooled diesel engine having gas cooled prechamber. 4,221,195, Cl. 123-254.000.

Haggard, Archie K.: *See*—
Haggard, Ward M., 4,221,264, Cl. 166-177.000.

Haggard, Ward M., to Haggard, Archie K. Tubular interior wiper. 4,221,264, Cl. 166-177.000.

Haglund, Stephen A.: *See*—
Pinckaers, B. Hubert; and Haglund, Stephen A., 4,222,046, Cl. 340-629.000.

Haines, Roger D. Crop harvester spout control improvements. 4,221,508, Cl. 406-41.000.

Hairegenics, Inc.: *See*—
Miller, Paul W., 4,221,212, Cl. 128-1.00R.

Hajdu, Ferenc. Lawn sweeper. 4,221,018, Cl. 15-347.000.

Haji, Hideki: *See*—
Shimizu, Tohru; Haji, Hideki; and Mochizuki, Fujiaki, 4,221,661, Cl. 210-721.000.

Halasa, Adel F.: *See*—
Hergenrother, William L.; and Halasa, Adel F., 4,221,898, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,899, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,900, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,221,904, Cl. 528-363.000.

Hall, Robert L.: *See*—
Allen, Leslie J.; Hall, Robert L.; and Penneck, Richard J., 4,221,457, Cl. 339-275.00R.

Hallgren, John E., to General Electric Company. Aromatic salicylate process. 4,221,920, Cl. 562-406.000.

Halstead, Robert W.; and Chaty, John C., to Union Carbide Corporation. Hydroformylation process. 4,221,743, Cl. 568-454.000.

Halstrum, James L. Remote switch control. 4,221,946, Cl. 200-331.000.

Hamada, Koji: *See*—
Sato, Susumu; and Hamada, Koji, 4,221,327, Cl. 235-144.0HC.

Hamada, Roy; Sakai, Tad; and Liu, Wen P. Simulated wheel cover assembly. 4,221,435, Cl. 301-37.0SS.

Hamashima, Tetsuo, to Matsushita Electric Works, Ltd. Hair clipper. 4,221,049, Cl. 30-195.000.

Hamilton, David R.: *See*—
Bruskotter, Charles B.; and Hamilton, David R., 4,221,676, Cl. 252-301.60F.

Hammar, Richard H.; and Harvey, Douglas J., to General Motors Corporation. Lightweight laminated grid for lead-acid storage batteries. 4,221,854, Cl. 429-234.000.

Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, to Hoechst Aktiengesellschaft. Shaped article comprising a permanently plasticized cellulose composition of high mechanical strength and preparation thereof. 4,221,821, Cl. 426-420.000.

Handen, Carl; Minami, Don S.; and Treder, John D., to International Business Machines Corporation. Document cartridge and mounting apparatus. 4,221,376, Cl. 271-149.000.

Hankins, Frederick E., to Research-Cottrell, Inc. Electrostatic precipitator rapping mechanism. 4,221,573, Cl. 55-112.000.

Hannan, William J.; and Woll, Harry J., to RCA Corporation. Patching tape for diffractive subtractive filter viewgraphs. 4,221,465, Cl. 350-162.0SF.

Hanoefner, Anton: *See*—
Koch, Harald; Haertenberger, Ludolf; and Hanoefner, Anton, 4,221,374, Cl. 271-4.000.

Hansen, Guenter: *See*—
Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, 4,221,711, Cl. 260-207.100.

Hansen, Henning M., to Danfoss A/S. Transmit-receive switching unit. 4,222,113, Cl. 367-87.000.

Hansen, James. Surgical suction apparatus. 4,221,220, Cl. 128-276.000.

Harada, Hitoshi: *See*—
Ninagawa, Chikato; Ozaki, Tadashi; Yonekawa, Minoru; and Harada, Hitoshi, 4,221,639, Cl. 204-26.000.

Harangozo, Julius, to Unique Ingenious Specialties Manufacturing and Sales Inc. Modular wall cabinet and ashtray receptacle. 4,221,442, Cl. 312-294.000.

Hardtmann, Goetz E.; and Coppola, Gary M., to Sandoz, Inc. Dihydroquinoline-one derivatives. 4,221,797, Cl. 424-258.000.

Hardwick, William E., to Davy International (Oil & Chemicals) Limited. Effecting liquid-liquid contact. 4,221,658, Cl. 210-634.000.

Hardwick, William H.; and Gayler, Ronald, to United Kindgom Atomic Energy Authority. Treatment of substances. 4,221,680, Cl. 252-301.10W.

Hargem Ltd.: *See*—
Weissman, Ilan, 4,221,082, Cl. 51-229.000.

Harley, David N., to ITW Limited. Tamperproof shackle seals. 4,221,409, Cl. 292-322.000.

Harm, A. Robert: *See*—
Wahl, Kent R.; and Harm, A. Robert, 4,221,304, Cl. 221-1.000.

Harney, David E., to Catalyst Research Corporation. Iron-lithium anode for thermal batteries and thermal batteries made therefrom. 4,221,849, Cl. 429-112.000.

Harnish, James R., to Borg-Warner Corporation. Temperature compensated control for air conditioning system or heat pump. 4,221,116, Cl. 62-209.000.

Harold, Billy E. Vehicle transport trailer. 4,221,422, Cl. 410-26.000.

Harper, Douglas C.; Robinson, Norman; and Janikowski, Stanislaw M., to Fisons Limited. Process for preventing the formation of calcium sulphate scale. 4,221,769, Cl. 423-320.000.

Harris, Alexander T.; Kelly, Thomas J.; and Redwine, Terry W., to Du Pont de Nemours, E. I., and Company. Process for reducing dichlorobutene contamination in aqueous plant wastes. 4,221,659, Cl. 210-639.000.

Harris, Clarke E.: *See*—
Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., 4,221,463, Cl. 350-150.000.

Harris Corporation: *See*—
Seiler, Norman C., 4,221,931, Cl. 179-1.50R.

Harris, George M., to Harris-Hub Co., Inc. Bunk bed side rail hinge lock. 4,221,012, Cl. 5-430.000.
Harris-Hub Co., Inc.: *See*—
Harris, George M., 4,221,012, Cl. 5-430.000.
Harrison, Edward S.: *See*—
Nunlist, Erwin J.; Coleman, Howard G.; and Harrison, Edward S., 4,221,488, Cl. 366-343.000.
Harshaw Chemical Company, The: *See*—
Little, Frank, 4,221,663, Cl. 210-193.000.
Hartwell, Walter T.: *See*—
Cornell, Ronald G.; Crane, Bently A.; Hartwell, Walter T.; and Williams, John G., 4,221,933, Cl. 179-6.00C.
Hartz, John R.: *See*—
Mueller, Paul A.; Hartz, John R.; Pawlowski, Elaine D.; and Freedman, M. David, 4,221,974, Cl. 250-563.000.
Harvey, Donald M., to Eastman Kodak Company. Camera film magazine. 4,221,479, Cl. 354-275.000.
Harvey, Douglas J.: *See*—
Hammar, Richard H.; and Harvey, Douglas J., 4,221,854, Cl. 429-234.000.
Harvey, Samuel E.; and Pegram, Philip H., to Dunlop Limited. Thermal fuse device. 4,221,231, Cl. 137-72.000.
Hasbro Industries, Inc.: *See*—
Carini, Edward, 4,221,388, Cl. 273-248.000.
Hasegawa, Kenichi: *See*—
Fukada, Minoru; Sakaguchi, Zen; and Hasegawa, Kenichi, 4,221,317, Cl. 226-188.000.
Hasenour, James A. Decorative coating of metal. 4,221,844, Cl. 428-623.000.
Hasker, Jan; van Ijzendoorn, Petrus R.; and Roelofs, Hendrik, to U.S. Philips Corporation. Low pressure gas discharge lamp having fibers evenly distributed between the electrodes. 4,221,988, Cl. 313-203.000.
Haught, Thomas P.; and Johnson, Dale F., to General Electric Company. High accuracy control system. 4,221,998, Cl. 318-661.000.
Haugwitz, Rudiger D.: *See*—
Wade, Peter C.; Bernstein, Jack; and Haugwitz, Rudiger D., 4,221,796, Cl. 424-256.000.
Hauth, Wolfgang; and Ehrlinger, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Microwave circulator on a substrate. 4,222,015, Cl. 333-1.100.
Hawk, Charles W., Jr.: *See*—
McCoy, Darl M.; and Hawk, Charles W., Jr., 4,221,036, Cl. 29-156.4WL.
Hawker Siddeley Brackett Limited: *See*—
Bainbridge, George E., 4,221,390, Cl. 277-12.000.
Hawthorne Industries, Inc.: *See*—
Goodrich, Edward W., 4,222,087, Cl. 361-104.000.
Hayashi, Motoshige: *See*—
Seki, Tatsujiro; Fujii, Motoji; Hayashi, Motoshige; and Tsubone, Masahiro, 4,221,621, Cl. 156-78.000.
Hayashi, Yoshimasa; Ohnishi, Akihiro; Waku, Makio; and Kamino, Hideo, to Nissan Motor Company, Limited. Cross-flow type internal combustion engine with a small sized exhaust gas recirculating system. 4,221,203, Cl. 123-568.000.
Hayashi, Yoshimasa: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Fujino, Haruo, 4,221,197, Cl. 123-316.000.
Hayes, Clyde M., to Eltra Corporation. Method for assembling a brush cage. 4,221,046, Cl. 29-596.000.
Haynes, Harold G.; and Taylor, Robert W., to Fisons Limited. Process for preparing bendiocarb of crystalline form A. 4,221,718, Cl. 260-340.50R.
Hazenveld, Martin G. Garment hanger. 4,221,310, Cl. 223-94.000.
Heaney, James J., to Anthony's Manufacturing Company, Inc. Fully exposed shelf standard. 4,221,443, Cl. 312-306.000.
Hebel Gasbetonwerk GmbH: *See*—
Doblinger, Heinz, 4,221,598, Cl. 106-87.000.
Heck, Roland H.: *See*—
Stein, Thomas R.; Heck, Roland H.; and Cabal, Albert V., 4,221,654, Cl. 208-15.000.
Heckles, John S., to Armstrong Cork Company. Acrylate-ureadiacetoacetamide-diacetoacetamide copolymers. 4,221,902, Cl. 528-228.000.
Hector, Gunter: *See*—
Bodewein, Jakob; and Hector, Gunter, 4,221,377, Cl. 271-183.000.
Hedberg, Henry C., Jr., to Ormet Corporation. Filtration apparatus. 4,221,666, Cl. 210-236.000.
Heim, Richard; and Fischer, Georg, to Texas Instruments Deutschland GmbH. Apparatus for transferring objects. 4,221,533, Cl. 414-744.00B.
Heim, Richard: *See*—
Hoffmann, Johann; Heim, Richard; and Fischer, Georg, 4,221,522, Cl. 414-417.000.
Heiman, Frederic P., to Mars, Incorporated. Separable coin storage tube assembly. 4,221,227, Cl. 133-3.00D.
Heimbigner, Gary L.: *See*—
Godejahn, Gordon C., Jr.; and Heimbigner, Gary L., 4,221,044, Cl. 29-571.000.
Heiney, Elmer T., III; Merchant, Stanley R.; and Green, Wells L., to Ford Motor Company. Exhaust gas sensor having two titania ceramic elements. 4,222,026, Cl. 338-34.000.
Heinrich de Fries Gesellschaft mit beschrankter Haftung: *See*—
Walerowski, Reinhard, 4,221,301, Cl. 212-134.000.
Heissler, Herbert; Wurtinger, Horst; and Schaab, Karl H., to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of manufacturing fiber-reinforced plastic bodies. 4,221,623, Cl. 156-169.000.
Heliotherme, Inc.: *See*—
Cvijanovich, George B., 4,221,210, Cl. 126-445.000.
Hellerqvist, Gustaf R., deceased; and Hellerqvist, Ingeborg H. C., legal representative, to SCA Development Aktiebolag. Method and apparatus for refining fiberous material. 4,221,631, Cl. 162-23.000.
Hellerqvist, Ingeborg H. C., legal representative: *See*—
Hellerqvist, Gustaf R., deceased; and Hellerqvist, Ingeborg H. C., legal representative, 4,221,631, Cl. 162-23.000.
Hellman, Wayne R.: *See*—
Phillipp, Robert G.; Hellman, Wayne R.; Matz, Wayne C.; and Bacharowski, Walter, Jr., 4,221,993, Cl. 315-73.000.
Henderson, William E.; Goering, Jerry B.; and Dempsey, Gene A., to John D. Hollingsworth on Wheels, Inc. Carding flat structure. 4,221,023, Cl. 19-113.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Eschwey, Helmut; Galinke, Joachim, deceased; and Wiemers, Norbert, 4,221,685, Cl. 260-22.00A.
Graupner, Werner; Oberlack, Heinz; and Welling, Hermann-Josef, 4,221,565, Cl. 8-137.000.
Plapper, Juergen; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,221,564, Cl. 8-94.170.
Hepner, Georges; and Castera, Jean-Paul, to Thomson-CSF. Arrangement for transmitting polarized optical radiations. 4,221,460, Cl. 350-96.130.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing ortho-difunctional phenylene substitutents. 4,221,898, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing substituents derived from alkyl or aryl hydrazines. 4,221,899, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene copolymers containing substituents derived from substituted 2-nitroethanols. 4,221,900, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene copolymers containing substituents derived from pyruvate esters. 4,221,904, Cl. 528-363.000.
Hertz, Walter; and Stroh, Jan, to Siemens Aktiengesellschaft. Apparatus and method for quenching an arc in a gas flow circuit. 4,221,942, Cl. 200-148.00R.
Hess, Heinz; and Peth, Horst, to Robert Bosch GmbH. Functional curve displaying process and apparatus. 4,222,106, Cl. 364-521.000.
Hewlett-Packard Company: *See*—
Judell, Neil H. K., 4,222,110, Cl. 364-724.000.
Higginbotham, John D.: *See*—
Daniels, Michael J.; and Higginbotham, John D., 4,221,704, Cl. 260-112.00R.
Hill, James J., to Medi-Technical Corporation. Power supply. 4,222,099, Cl. 363-101.000.
Hill, John. Adjustable reel for winding wire coils. 4,221,347, Cl. 242-110.200.
Hillberg, Robert L., to Wildey Firearms Company, Inc. Firearm grip assembly. 4,221,066, Cl. 42-71.00P.
Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Adsorbent for artificial organs. 4,221,695, Cl. 260-42.140.
Hirabayashi, Toshimichi: *See*—
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.
Hiraoka Kogyo Kabushiki Kaisha: *See*—
Fukada, Minoru; Sakaguchi, Zen; and Hasegawa, Kenichi, 4,221,317, Cl. 226-188.000.
Hirasawa, Shigemi: *See*—
Yamazaki, Eiichi; Kanai, Hiromi; Taniguchi, Masao; and Hirasawa, Shigemi, 4,221,990, Cl. 313-466.000.
Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Multiplexed information signal receiving system. 4,222,073, Cl. 358-145.000.
Hirose, Takeshi; and Okumura, Akia, to Fuji Photo Film Co., Ltd. Process for forming color photographic images. 4,221,860, Cl. 430-379.000.
Hisamatsu, Hiroshi: *See*—
Ueda, Joji; Hisamatsu, Hiroshi; and Takamura, Yoshio, 4,221,992, Cl. 315-10.000.
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Laminated material for packaging film. 4,221,841, Cl. 428-497.000.
Hitachi, Ltd.: *See*—
Aida, Masaaki; Kobayashi, Takashi; Taneda, Yukinori; and Sugimoto, Noboru, 4,221,042, Cl. 29-564.400.
Kamo, Yoshihisa; Tsutsumi, Zenji; and Maejima, Hiroshi, 4,222,081, Cl. 360-67.000.
Konishi, Tadao; and Utsumi, Yoshiharu, 4,221,965, Cl. 250-311.000.
Naito, Shotaro, 4,222,005, Cl. 324-158.0MG.
Yamazaki, Eiichi; Kanai, Hiromi; Taniguchi, Masao; and Hirasawa, Shigemi, 4,221,990, Cl. 313-466.000.
Hitzel, Volker: *See*—
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Pfaff, Werner, 4,221,815, Cl. 424-319.000.
Hochtemperatur-Reaktorbau GmbH.: *See*—
Baumgaertner, Heinrich; and Barchewitz, Ekkehard, 4,221,262, Cl. 165-157.000.

Hockham, George A.; and Wolfson, Ronald I., to International Telephone and Telegraph Corporation. Around-the-mast rotary coupler. 4,222,055, Cl. 343-762.000.

Hoechst Aktiengesellschaft: *See*—
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,221,821, Cl. 426-420.000.
Weber, Rolf-Ortwin; Perrey, Klaus; and von Rechenberg, Wolfrad, 4,221,793, Cl. 424-250.000.
Wellenhofer, Herbert; and Stahl, Hans-Otmar, 4,221,755, Cl. 264-169.000.
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Pfaff, Werner, 4,221,815, Cl. 424-319.000.

Hoekstra, Jan P.: *See*—
Pennebaker, William B.; and Hoekstra, Jan P., 4,221,275, Cl. 180-206.000.

Hoeschele, Guenther K., to Du Pont de Nemours, E. I., and Company. Stabilization of polymers containing poly(alkylene oxide) units. 4,221,703, Cl. 260-45.9NC.

Hoff, Stephen J., to Hoffco Inc. Clutch and brake assembly for implement drive. 4,221,284, Cl. 192-12.0BA.

Hoffco Inc.: *See*—
Hoff, Stephen J., 4,221,284, Cl. 192-12.0BA.

Hoffman, Robert E.; Skinner, Timothy J.; and Woolley, James M., to White Consolidated Industries, Inc. Resilient mount for dishwasher motor and pump assembly. 4,221,547, Cl. 417-363.000.

Hoffmann, Johann; Heim, Richard; and Fischer, Georg, to Texas Instruments Deutschland GmbH. Apparatus for the automatic stepwise displacement and changing of magazines. 4,221,522, Cl. 414-417.000.

Hoffmann-La Roche Inc.: *See*—
Liu, Chao-Min; and Westley, John, 4,221,724, Cl. 260-345.80R.

Hogan, John C.; and Gibson, Alan F., to Armco Inc. Method for reclaiming galvanizing quality zinc alloy from continuous galvanizing line top dross. 4,221,591, Cl. 75-86.000.

Hokusei Aluminum Company Ltd.: *See*—
Shibata, Kizo; Ootsuka, Ichiro; Anada, Shyoichi; and Wakasugi, Kunio, 4,221,640, Cl. 204-33.000.

Holland Corporation, The: *See*—
Holland, Raymond P., Jr., 4,221,351, Cl. 244-153.00R.

Holland, Raymond P., Jr., to Holland Corporation, The. Kites. 4,221,351, Cl. 244-153.00R.

Holmberg, Bengt M.: *See*—
Bjork, Jan; Olsson, Jan T.; and Holmberg, Bengt M., 4,221,166, Cl. 102-13.000.

Holstein & Kappert GmbH: *See*—
Mnilk, Reinhold; Kurreck, Manfred; Geltenpoth, Ulrich; and Keil, Manfred, 4,221,760, Cl. 264-524.000.

Holt, Jan D., to ACF Industries, Incorporated. Trailer hitch head having jaws which bear all of the kingpin wear. 4,221,397, Cl. 280-436.000.

Honeywell Inc.: *See*—
Faust, Matthew J.; and Picozzi, James R., 4,221,851, Cl. 429-197.000.
Nelson, Richard E., 4,221,237, Cl. 137-625.290.
Pinckaers, B. Hubert; and Haglund, Stephen A., 4,222,046, Cl. 340-629.000.
Schulze, Richard G., 4,221,485, Cl. 356-338.000.

Hooker Chemicals & Plastics Corp.: *See*—
Salee, Gideon, 4,221,694, Cl. 260-40.00R.

Hoop, James B. Device for suspending articles from a ceiling or the like. 4,221,355, Cl. 248-340.000.

Hopings, Donald B.: *See*—
Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., 4,221,053, Cl. 33-174.00L.

Horiguchi, Shojiro: *See*—
Kawamura, Kimihide; and Horiguchi, Shojiro, 4,221,709, Cl. 260-165.000.

Horn, Charles E.: *See*—
Lochte, Glen E.; and Horn, Charles E., 4,221,408, Cl. 285-276.000.

Horn, Charles S.: *See*—
Horn, Herbert; Horn, Helene; Horn, Charles S.; and Horn, Joseph, 4,221,822, Cl. 426-438.000.

Horn, Helene: *See*—
Horn, Herbert; Horn, Helene; Horn, Charles S.; and Horn, Joseph, 4,221,822, Cl. 426-438.000.

Horn, Herbert; Horn, Helene; Horn, Charles S.; and Horn, Joseph, to Horn's Poultry, Inc. Processed, frozen ear of corn and method of cooking the same. 4,221,822, Cl. 426-438.000.

Horn, Joseph: *See*—
Horn, Herbert; Horn, Helene; Horn, Charles S.; and Horn, Joseph, 4,221,822, Cl. 426-438.000.

Horn's Poultry, Inc.: *See*—
Horn, Herbert; Horn, Helene; Horn, Charles S.; and Horn, Joseph, 4,221,822, Cl. 426-438.000.

Hosaka, Akio: *See*—
Ezoe, Mitsuhiko; and Hosaka, Akio, 4,221,193, Cl. 123-483.000.

Hoshi, Yoshiyuki; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Process for preparing microcapsules by polymerization of urea and formaldehyde in the presence of gum arabic. 4,221,710, Cl. 260-17.300.

Hostert AutomataDusseldorf GmbH & Co.: *See*—
Simon, Joachim; Wachholder, Werner; and Seifert, Hans-Georg, 4,221,346, Cl. 242-55.010.

Hostetler, Eldon, to Ziggity Systems, Inc. Watering cup for poultry and animals. 4,221,188, Cl. 119-72.000.

Howa Kogyo Kabushiki Kaisha: *See*—
Iida, Shigenobu, 4,221,022, Cl. 19-106.00R.

Howe, Dennis G.; Thomas, Harold T.; and Lee, James K., to Eastman Kodak Company. Recording video information on a flexible master disc. 4,222,070, Cl. 358-128.500.

Hronek, George: *See*—
Wunder, John E.; Hronek, George; and Gaudion, Thomas J., 4,221,261, Cl. 165-74.000.

Hsieh, Chuan-Kang R.: *See*—
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,221,677, Cl. 252-455.00Z.

Huber, Theodor: *See*—
Lermann, Peter; Cocron, Istvan; Wagensonner, Eduard; Borowski, Kurt; and Huber, Theodor, 4,221,474, Cl. 354-23.00D.

Hubert, Guy; and Ghyselinck, Philippe, to Solvay & Cie. Process for the production of hollow articles from preforms of a thermoplastic. 4,221,759, Cl. 264-520.000.

Huck Manufacturing Company: *See*—
Jason, Harold C., 4,221,152, Cl. 85-7.000.

Hudson, Ray E. Pipe spinner. 4,221,269, Cl. 173-163.000.

Huff, Terrence, to Exxon Research & Engineering Co. High impact melt-flowable dual continuum melt mixed polymer blends of polypropylene, polyethylene, and ethylene-propylene rubber. 4,221,882, Cl. 525-240.000.

Huffer, Douglas L.: *See*—
Eiserman, Martin A.; and Huffer, Douglas L., 4,221,424, Cl. 296-146.000.

Hufnagl, Gerhart; and Zehnder, Clark R., to Boeing Commercial Airplane Company. Semi-tubular rivets and method of using. 4,221,041, Cl. 29-512.000.

Hughes Aircraft Company: *See*—
Pedinoff, Melvin E.; Stafsudd, Oscar M.; and Braunstein, Morris, 4,221,464, Cl. 350-152.000.

Hughes, Donald W. K.; and Myers, Ronald W., to AMP Incorporated. Electrical connector receptacle. 4,221,458, Cl. 339-126.00R.

Hughes, James K.; and Erickson, Wayne K., to Phillips Petroleum Company. Crimped thermoplastic fibers. 4,221,838, Cl. 428-369.000.

Hughes, John F., to Kirby, Shapiro, Eades and Cohen. Continuous production of starch hydrolysates. 4,221,609, Cl. 127-38.000.

Hui, George P.: *See*—
Anglikowski, Ronald E.; Hui, George P.; Lese, Gregory; and Nash, Donald H., 4,221,932, Cl. 179-2.0EA.

Hulin, Jean-Pierre: *See*—
Dubois, Gilles; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,221,513, Cl. 409-131.000.

Humme, Gert; Fahnler, Friedrich; Neuray, Dieter; Ott, Karl-Heinz; and Tacke, Peter, to Bayer Aktiengesellschaft. Impact-resistant polyamide moulding compositions. 4,221,879, Cl. 525-66.000.

Hunt, Guilbert M., to General Foods Corporation. Container having separate storage faciiities for two materials. 4,221,291, Cl. 206-222.000.

Hurt, Hampton L., to Stroud, Frank D., a part interest. Method of forming a double pocket envelope. 4,221,161, Cl. 93-1.00R.

Huvers, Marius E., to Canadair Limited. Stereoscopic viewer for panoramic camera film. 4,221,462, Cl. 350-136.000.

Hyche, Kenneth W.: *See*—
Cook, Mary J.; and Hyche, Kenneth W., 4,221,696, Cl. 260-42.460.

Hydrocarbon Research, Inc.: *See*—
Chervenak, Michael C.; and Comolli, Alfred G., 4,221,653, Cl. 208-8.0LE.

Hylsa, S.A.: *See*—
Verdugo, Marco A. F.; and Martinez, Leobardo C., 4,221,366, Cl. 266-197.000.

I. D. Engineering, Inc.: *See*—
Martens, Henry J.; and Vandebult, Jan, 4,221,025, Cl. 24-150.00R.

Ichikawa, Minoru: *See*—
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.

Ichikawa, Singo: *See*—
Onda, Mitsuo; and Ichikawa, Singo, 4,221,111, Cl. 368-35.000.

Ichimura, Masaaki: *See*—
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.

ICI Australia Limited: *See*—
Johnson, William L., 4,221,092, Cl. 52-232.000.
Lydiate, Jack, 4,221,872, Cl. 521-32.000.
McLean, Colin D., 4,221,616, Cl. 149-2.000.

Idaho Research Foundation, Inc.: *See*—
MacPhee, Craig; and Cheng, Fred F., 4,221,782, Cl. 424-127.000.

Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, to JGC Corporation; and Takeda Chemical Industries, Ltd. Apparatus for regeneration of wet spent active carbon. 4,221,560, Cl. 432-99.000.

Igusa, Kazuo: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.

Iida, Shigenobu, to Howa Kogyo Kabushiki Kaisha. Apparatus for stripping the carded web from the doffer cylinder of the textile carding machine. 4,221,022, Cl. 19-106.00R.

Iida, Yoshimitsu: *See—*
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.

Ikeda, Isamu, to Fidelity-Research, Inc. Moving iron type cartridge. 4,221,937, Cl. 179-100.41M.

Iles, Gerald S.; and Selman, Gordon L., to Johnson, Matthey & Co., Limited. Resistance thermometers. 4,222,025, Cl. 338-25.000.

Illinois Cereal Mills: *See—*
Antholz, Phillip; and Swarthout, E. Jack, 4,221,684, Cl. 260-17.4GC.

Imada, Katsumi: *See—*
Oga, Shiyunichiro; Asano, Kazuo; and Imada, Katsumi, 4,221,723, Cl. 260-345.70R.

Imai, Tamotsu, to UOP Inc. Production of acrylonitrile. 4,221,738, Cl. 260-465.900.

Imai, Toshihiro, to Olympus Optical Company Limited. Wide-angle photographic camera lens system. 4,221,467, Cl. 350-215.000.

Imaizumi, Nobuo; and Wakana, Kazuo, to Namiki Precision Jewel Co., Ltd. Rare earth-cobalt system permanent magnetic alloys and method of preparing same. 4,221,613, Cl. 148-103.000.

Imperial Chemical Industries Limited: *See—*
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., 4,221,697, Cl. 260-42.530.
Smith, Leslie H., 4,221,807, Cl. 424-278.000.

Industrial Automation Corporation: *See—*
Peyton, John J., 4,221,961, Cl. 250-223.00B.

Inficon Leybold-Heraeus Inc.: *See—*
Schlereth, Fritz H.; and Lanpher, Gary E., 4,221,964, Cl. 250-290.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Raccanelli, Mirco; and Romano, Carlo, 4,222,082, Cl. 360-75.000.
Tronzano, Sergio; Raccanelli, Mirco; and Romano, Carlo, 4,222,083, Cl. 360-92.000.

Ingebrigtson, Donald N.: *See—*
Danielson, Jack B.; and Ingebrigtson, Donald N., 4,221,691, Cl. 260-33.6SB.

Inkmann, Mark S., to Globe-Union Inc. Method and apparatus for storage battery electrolyte circulation. 4,221,847, Cl. 429-70.000.

Inoue, Akira; Suzuki, Takehiko; Saito, Koichi; Aoki, Yukio; Ono, Tetsuji; and Ohara, Takashi, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Catalyst for purifying exhaust and waste gases. 4,221,768, Cl. 423-239.000.

Insele OY: *See—*
Otala, Matti N. T.; and Kuokkanen, Lauri, 4,221,260, Cl. 165-11.00R.

Institut Francais du Petrole: *See—*
Vandecasteele, Jean-Paul; and Lemal, Jeannine, 4,221,869, Cl. 435-117.000.

Intermountain Health Care: *See—*
Clark, Justin S., 4,221,224, Cl. 128-718.000.
Clark, Justin S.; Wallace, William D.; and Farr, Frederick L., 4,221,567, Cl. 23-230.00B.

International Business Machines Corporation: *See—*
Engle, Vencil D.; Marowski, Raymond M.; Pollard, Edward E.; and Pullen, John L., 4,221,489, Cl. 400-636.300.
Frazier, Giles R., 4,222,080, Cl. 360-40.000.
Handen, Carl; Minami, Don S.; and Treder, John D., 4,221,376, Cl. 271-149.000.
Narken, Bernt; and Tummala, Rao R., 4,221,047, Cl. 29-840.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,221,721, Cl. 260-345.100.

International Harvester Company: *See—*
Fardal, Randolph G., 4,221,266, Cl. 172-4.000.

International Minerals & Chemical Corp.: *See—*
Young, Vernon V.; Williams, Robert D.; and Ivy, Richard E., 4,221,791, Cl. 424-248.400.

International Paper Company: *See—*
Bartley, Thomas S., 4,221,520, Cl. 414-355.000.

International Standard Electric Corporation: *See—*
Barsellotti, John A.; and Ahmed, Fahim, 4,221,935, Cl. 179-17.00E.

International Tapetronics Corporation: *See—*
Jenkins, John P.; and Fesler, John, 4,221,316, Cl. 226-35.000.

International Telephone and Telegraph Corporation: *See—*
Hockham, George A.; and Wolfson, Ronald I., 4,222,055, Cl. 343-762.000.
Powell, Lloyd J., 4,221,447, Cl. 339-64.00M.

INTERx Research Corporation: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,221,787, Cl. 424-241.000.

Inuzuka, Yoichi: *See—*
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, 4,221,606, Cl. 106-288.00Q.

Ipsen Industries International, Gesellschaft mit beschrankter Haftung: *See—*
Limque, Ferdinand; and Bertrand, Hans, 4,221,561, Cl. 432-128.000.

Irabu, Takeru: *See—*
Kiuchi, Eichi; and Irabu, Takeru, 4,222,050, Cl. 343-7.700.

Isaksson, Nils K.: *See—*
Avsan, Oleg; and Isaksson, Nils K., 4,222,101, Cl. 364-200.000.

Isaoka, Shin-ichi: *See—*
Kawakami, Shigenao; Tajiri, Shigenori; Tashiro, Hiroshi; and Isaoka, Shin-ichi, 4,221,888, Cl. 525-369.000.

Isayama, Takuro: *See—*
Sato, Tsutomu; and Isayama, Takuro, 4,222,060, Cl. 346-140.00R.

Ishiai, Tamio: *See—*
Torimae, Yasuhiro; and Ishiai, Tamio, 4,221,572, Cl. 51-298.000.

Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Noble metal catalyst for dehydrogenation of cyclohexanes. 4,221,678, Cl. 252-466.0PT.

Ishiwaka, Takumi: *See—*
Yukuta, Toshio; Ishiwaka, Takumi; and Yamaguchi, Noboru, 4,221,875, Cl. 521-128.000.

Isoyama, Nobukazu: *See—*
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,221,179, Cl. 112-158.00E.

Ito, Michio: *See—*
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.

Ito, Nobuo: *See—*
Enomoto, Tadao; Koide, Hiroshi; Ito, Nobuo; Kasai, Hidefumi; and Noguchi, Tsutomu, 4,221,112, Cl. 368-84.000.

ITW Limited: *See—*
Harley, David N., 4,221,409, Cl. 292-322.000.

Ivanov, Vitaly A.: *See—*
Kostikov, Valery I.; Tarabanov, Alexandr S.; Ivanov, Vitaly A.; and Zykov, Anatoly M., 4,221,831, Cl. 427-314.000.

Ivy, Richard E.: *See—*
Young, Vernon V.; Williams, Robert D.; and Ivy, Richard E., 4,221,791, Cl. 424-248.400.

Iwai, Hiroshi: *See—*
Nakate, Yasusi; Iwai, Hiroshi; and Nanishi, Kiyoshi, 4,221,683, Cl. 260-15.000.

Iwasaki, Mitsuhiko: *See—*
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.

Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic materials. 4,221,864, Cl. 430-572.000.

J. B. Nicolas France S.A.: *See—*
Pautrat, Jean-Claude, 4,221,398, Cl. 280-444.000.

J. M. Huber Corporation: *See—*
van der Heem, Peter, 4,221,771, Cl. 423-419.00P.

Jacoby, Charles H., to Occidental Minerals Corporation. Retrogressively in-situ ore body chemical mining system and method. 4,221,433, Cl. 299-4.000.

Jaerisch, Walter; and Makosch, G/nter, to Makosch, Gunter. Interferometric measurement with λ/4 resolution. 4,221,486, Cl. 356-357.000.

Jaffe, Richard A. Micromodular electronic package. 4,222,090, Cl. 361-386.000.

Jagenberg Werke Aktiengesellschaft: *See—*
Bodewein, Jakob; and Hector, Gunter, 4,221,377, Cl. 271-183.000.

Jager, Jurgen; and Haase, Georg, to Vorwerk & Co Interhaolding GmbH. Floorcare device. 4,221,019, Cl. 15-368.000.

Jahrig, Siegfried; and Liebig, Reinhard, to Siemens Aktiengesellschaft. Driving apparatus for electric power circuit breakers with rectangular housing. 4,221,944, Cl. 200-303.000.

Jakusch, Helmut: *See—*
Autzen, Horst; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Rudolf, Peter; Sarnecki, Wilhelm; and Steck, Werner, 4,221,776, Cl. 423-634.000.

Jalics, Stephen M., to Gas Research Institute. Apparatus for detecting the occurrence of inadequate levels of combustion air at a flame. 4,221,557, Cl. 431-22.000.

Jameel, Khaja M.; and Koppensteiner, James V., to GTE Automatic Electric Laboratories Incorporated. Control winding for a magnetic latching reed relay. 4,222,020, Cl. 335-153.000.

Jancis, Elmar H.: *See—*
Wheeler, Edward L.; and Jancis, Elmar H., 4,221,702, Cl. 260-45.8RW.

Janikowski, Stanislaw M.: *See—*
Harper, Douglas C.; Robinson, Norman; and Janikowski, Stanislaw M., 4,221,769, Cl. 423-320.000.

Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yasukata, 4,221,178, Cl. 112-158.00E.
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,221,177, Cl. 112-158.00E.

Jansen, Pierre G.; Kessels, Jozef L. W.; and Waumans, Benny L. A., to U.S. Philips Corporation. Data buffer memory of the "first-in, first-out" type, comprising a variable input and a variable output. 4,222,102, Cl. 364-200.000.

Jaquiss, Donald B. G.; Scott, Steven W.; Vaughn, Howard A., Jr.; and Williams, Joseph B., to General Electric Company. Stabilized polycarbonate compositions. 4,221,728, Cl. 260-37.0SB.

Jason, Harold C., to Huck Manufacturing Company. Two piece fastener including a pin with undercut pintail. 4,221,152, Cl. 85-7.000.

Jasper, Allen L., to National Mine Service Company. Adjustable jack. 4,221,363, Cl. 254-98.000.

Jasper Corporation: *See—*
Frobose, James W., 4,221,430, Cl. 297-353.000.

Jean, Olivier A. L. Apparatus for subjecting a material to electromagnetic waves. 4,221,948, Cl. 219-10.55A.
Jelatis, Demetrius G.: *See*—
Haaker, Lester W.; and Jelatis, Demetrius G., 4,221,516, Cl. 414-5.000.
Jenkins, John P.; and Fesler, John, to International Tapetronics Corporation. NAB Tape cartridge eraser and splice finder. 4,221,316, Cl. 226-35.000.
Jentsch, Hans G. Method of increasing the durability of milk. 4,221,820, Cl. 426-410.000.
Jerome, Susanne M. Binding strap fastener. 4,221,029, Cl. 24-265.00R.
Jet Propulsion Laboratory: *See*—
Boettger, Heinz G., 4,221,568, Cl. 23-230.00R.
JGC Corporation: *See*—
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.
Jinba, Terumasa: *See*—
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Asamoto, Tetsuhiro; and Uebayashi, Takeo, 4,221,952, Cl. 219-69.00G.
Jobst, Wolfgang: *See*—
Mobus, Dietmar; Ehrenberger, Gunter; and Jobst, Wolfgang, 4,221,945, Cl. 200-316.000.
John D. Hollingsworth on Wheels, Inc.: *See*—
Henderson, William E.; Goering, Jerry B.; and Dempsey, Gene A., 4,221,023, Cl. 19-113.000.
Johns-Manville Corporation: *See*—
Laipenieks, Juris, 4,221,633, Cl. 162-154.000.
Johnson, Dale F.: *See*—
Haught, Thomas P.; and Johnson, Dale F., 4,221,998, Cl. 318-661.000.
Johnson, Matthey & Co., Limited: *See*—
Iles, Gerald S.; and Selman, Gordon L., 4,222,025, Cl. 338-25.000.
Johnson, Robert A.: *See*—
Black, Gregory T.; and Johnson, Robert A., 4,221,962, Cl. 250-227.000.
Johnson, Robert D.; Saam, John C.; and Schmidt, Christine M., to Dow Corning Corporation. Silicone emulsion which provides an elastomeric product and methods for preparation. 4,221,688, Cl. 260-29.20M.
Johnson, Walter J., to Boeing Company, The. Three dimension graphic generator for displays with hidden lines. 4,222,048, Cl. 340-747.000.
Johnson, William L., to ICI Australia Limited. Sleeve. 4,221,092, Cl. 52-232.000.
Johnston, Sherwood: *See*—
Sloan, John W.; and Bumb, Frank E., Jr., 4,222,111, Cl. 364-900.000.
Joly, Jean: *See*—
Guillermin, Rene; Joly, Jean; and Puthon, Joseph, 4,221,833, Cl. 428-92.000.
Jones, Billy E., to United States of America, Army. Power transition circuit. 4,222,100, Cl. 363-124.000.
Jones, Charles R.; and Schultz, Donald C., to Dana Corporation. Centrifugal lubrication system for transmission pocket bearing. 4,221,279, Cl. 184-11.00R.
Jones, John B., Jr., to Paraho Corporation. Fluid-solid contact vessel having fluid distributors therein. 4,221,638, Cl. 202-121.000.
Jones, Thomas C., to NRM Corporation. Bladder leak and rupture detector. 4,221,124, Cl. 73-40.000.
Jordan, Ronald C. Tool for separating and connecting links of flat chain belt. 4,221,113, Cl. 59-7.000.
Jos. Dyson and Sons, Inc.: *See*—
Quinn, Russell C., 4,221,535, Cl. 414-785.000.
Joseph, John. Pool skimming device. 4,221,662, Cl. 210-169.000.
Joseph, Joseph P.: *See*—
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,221,907, Cl. 536-118.000.
Joslyn, Larry J., to Sybron Corporation. Demand regulated electrode-type steam generator. 4,221,955, Cl. 219-287.000.
Judell, Neil H. K., to Hewlett-Packard Company. Analog to digital converter system. 4,222,110, Cl. 364-724.000.
Jung, Michel: *See*—
Bey, Philippe; and Jung, Michel, 4,221,914, Cl. 548-342.000.
K.C.E. Kiss Consulting Engineers, Verfahrenstechnik GmbH: *See*—
Kiss, Gunter H., 4,221,556, Cl. 425-182.000.
Kabel- und Metallwerke Gutehoffnungshutte AG.: *See*—
Ziemek, Gerhard, 4,221,670, Cl. 210-474.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Komiyama, Kunihiko; Kanai, Seikichi; and Okada, Masaru, 4,221,190, Cl. 123-263.000.
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.
Kabushiki Kaisha Kubota Seisakusho: *See*—
Kubota, Tokihito, 4,221,325, Cl. 233-26.000.
Kabushiki Kaisha Toa Kiaki Seisakusho: *See*—
Nishimura, Yosaku, 4,221,364, Cl. 254-338.000.
Kabushiki Kaisha Tokuda Seisakusho: *See*—
Kuriyama, Noboru, 4,221,652, Cl. 204-298.000.
Kachur, Nicholas W., to W. Braun Company. Roll-on applicator with spring bar ball supports. 4,221,494, Cl. 401-213.000.
Kakenyaku Kako Co., Ltd.: *See*—
Kondo, Shigeji, 4,221,705, Cl. 260-112.50R.
Kakinuma, Toshihide: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,221,177, Cl. 112-158.00E.
Kalash, Edwin: *See*—
Clampitt, Russell F.; Kalash, Edwin; Schuette, Dennis C.; and Straub, Melvin J., 4,221,349, Cl. 242-192.000.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Indoanilines. 4,221,729, Cl. 260-396.00N.
Kalvoda, Jaroslav, to Ciba-Geigy Corporation. Novel halogenopregnadienes and process for the manufacture thereof. 4,221,786, Cl. 424-241.000.
Kamath, Venkatesh H.; Malachowski, Michael A.; and Vorndran, Charles P., to Xerox Corporation. Copy stacking tray with restraining fingers. 4,221,378, Cl. 271-220.000.
Kamath, Venkatesh H.; and Vorndran, Charles P., to Xerox Corporation. Copy stacking tray. 4,221,379, Cl. 271-289.000.
Kamino, Hideo: *See*—
Hayashi, Yoshimasa; Ohnishi, Akihiro; Waku, Makio; and Kamino, Hideo, 4,221,203, Cl. 123-568.000.
Kamo, Yoshihisa; Tsutsumi, Zenji; and Maejima, Hiroshi, to Hitachi, Ltd. Information reading device for a multitrack storage device. 4,222,081, Cl. 360-67.000.
Kamp, Heinz, to W. Schlafhorst & Co. Traveling thread-joining device. 4,221,109, Cl. 57-22.000.
Kanai, Hiromi: *See*—
Yamazaki, Eiichi; Kanai, Hiromi; Taniguchi, Masao; and Hirasawa, Shigemi, 4,221,990, Cl. 313-466.000.
Kanai, Seikichi: *See*—
Komiyama, Kunihiko; Kanai, Seikichi; and Okada, Masaru, 4,221,190, Cl. 123-263.000.
Kandpal, Tara C., to Tecumseh Products Company. Calculator for comparative product investment recovery. 4,221,326, Cl. 235-78.00F.
Kane Manufacturing Corporation: *See*—
Singer, Richard M.; and Seidl, Charles H., 4,221,038, Cl. 29-160.000.
Kansai Paint Co., Ltd.: *See*—
Nakate, Yasusi; Iwai, Hiroshi; and Nanishi, Kiyoshi, 4,221,683, Cl. 260-15.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Separable end stop of a slide fastener. 4,221,026, Cl. 24-205.11R.
Kao Soap Company: *See*—
Torimae, Yasuhiro; and Ishiai, Tamio, 4,221,572, Cl. 51-298.000.
Karaki, Takao, to Yoshida Kogyo K.K. Slide fastener-operated top hood for trucks. 4,221,256, Cl. 160-368.00R.
Karikawa, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film feeding mechanism for camera. 4,221,478, Cl. 354-213.000.
Karl Schmidt GmbH: *See*—
Grosser, Werner, 4,221,403, Cl. 280-806.000.
Kasai, Hidefumi: *See*—
Enomoto, Tadao; Koide, Hiroshi; Ito, Nobuo; Kasai, Hidefumi; and Noguchi, Tsutomu, 4,221,112, Cl. 368-84.000.
Kashiki, Masayuki: *See*—
Minagawa, Motomobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,221,700, Cl. 260-45.7PH.
Kashiwa, Norio: *See*—
Ushida, Yoshihisa; Odawara, Kiyoshi; Kashiwa, Norio; Toyota, Akinori; and Minami, Syuji, 4,221,894, Cl. 526-125.000.
Kataoka, Shigeyuki: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Kato, Hirosi: *See*—
Sakiyama, Kazuo; Ota, Hiroshi; and Kato, Hirosi, 4,221,686, Cl. 260-23.0EP.
Katsuji, Hasegawa, to Meinan Machinery Works, Inc. Veneer lathe. 4,221,247, Cl. 144-211.000.
Kauffman, Ivan L.; and Allen, Robert J., to Ex-Cell-O Corporation. Carton bottom tucking and tacking apparatus for packaging machines. 4,221,162, Cl. 93-36.800.
Kawachi, Donald A.: *See*—
Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., 4,221,463, Cl. 350-150.000.
Kawada, Soji. Device for protecting a coating on door of automobile. 4,221,411, Cl. 293-118.000.
Kawakami, Shigenao; Tajiri, Shigenori; Tashiro, Hiroshi; and Isaoka, Shin-ichi, to Sumitomo Chemical Company, Limited. Method of hydrolyzing acrylamide and methacrylamide polymers. 4,221,888, Cl. 525-369.000.
Kawamura, Kimihide; and Horiguchi, Shojiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Azo pigments. 4,221,709, Cl. 260-165.000.
Kawano, Mitsugi: *See*—
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Asamoto, Tetsuhiro; and Uebayashi, Takeo, 4,221,952, Cl. 219-69.00G.
Kawase, Shigeo: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,221,810, Cl. 424-284.000.
Kawasumi, Yoshio: *See*—
Sato, Haruki; and Kawasumi, Yoshio, 4,221,828, Cl. 427-217.000.
Kazmark, Eugene A. Garment bag attachment for portable luggage carrier. 4,221,402, Cl. 280-659.000.

KDP Societe anonyme Keller Dorian Papiers: *See—*
Besson, Raymond J., 4,221,986, Cl. 310-344.000.
Kearney & Trecker Corporation: *See—*
Dailey, Frank E., 4,221,043, Cl. 29-568.000.
Kebbekus, Earle R., to Will Ross, Inc. Chromatographic analysis of gaseous samples containing reactive sulfur. 4,221,569, Cl. 23-232.00C.
Keen, Bruce H.: *See—*
Bonikowski, Zbigniew; Keen, Bruce H.; Salamon, Dennis M.; and Tennant, John A., 4,221,947, Cl. 219-10.410.
Keglewitsch, Josef: *See—*
Petrelewicz, Edward F.; and Keglewitsch, Josef, 4,221,451, Cl. 339-105.000.
Kehl, Norman J., to Coach and Car Equipment Corporation. Wheel chair restraint. 4,221,396, Cl. 280-1.000.
Keil, Manfred: *See—*
Mnilk, Reinhold; Kurreck, Manfred; Geltenpoth, Ulrich; and Keil, Manfred, 4,221,760, Cl. 264-524.000.
Kell, Ralph W., to Goodyear Tire & Rubber Company, The. Tracked vehicle suspension. 4,221,272, Cl. 180-190.000.
Kelly, Thomas J.: *See—*
Harris, Alexander T.; Kelly, Thomas J.; and Redwine, Terry W., 4,221,659, Cl. 210-639.000.
Kelsey Hayes Co.: *See—*
Doerfler, Roger E., 4,221,437, Cl. 303-6.00C.
Kempkers, Gordon B., to Prince Corporation. Retractable hook for a vehicle. 4,221,354, Cl. 248-293.000.
Kennedy, Sterling R. Method of extracting sludge from sewage. 4,221,656, Cl. 210-805.000.
Kenny, Dennis J.: *See—*
Wright, Kenneth; and Kenny, Dennis J., 4,221,298, Cl. 211-4.000.
Kerekes, Bela, to Egyesult Izzolampa es Villamossagi Reszvenytarsasag. High-pressure discharge tube operable in the open air without outer protective envelope. 4,221,987, Cl. 313-42.000.
Kermer, Wolf-Dieter: *See—*
Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, 4,221,711, Cl. 260-207.100.
Kerner, James O.: *See—*
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Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Dias, Francisco J.; and Luhleich, Hartmut, 4,221,689, Cl. 260-29.300.
Kerr, Clark, Jr.: *See—*
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Kerr, Howard S.; Kettlewell, John R.; Driffield, John B., deceased; and Driffield, Margaret D., administrator, to Spar Aerospace Limited. Infrared surveillance.system. 4,221,966, Cl. 250-338.000.
Kessels, Jozef L. W.: *See—*
Jansen, Pierre G.; Kessels, Jozef L. W.; and Waumans, Benny L. A., 4,222,102, Cl. 364-200.000.
Kettlewell, John R.: *See—*
Kerr, Howard S.; Kettlewell, John R.; Driffield, John B., deceased; and Driffield, Margaret D., administrator, 4,221,966, Cl. 250-338.000.
Kharkovsky, Alexandr S.: *See—*
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.
Khoruzhy, Vasily M.: *See—*
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Kiefer, John E.; and Mumpower, Robert C., II, to Eastman Kodak Company. Hot melt adhesive for bonding filter tow, and filter elements bonded thereby. 4,221,226, Cl. 131-267.000.
Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Gas-blast type circuit interrupter. 4,221,943, Cl. 200-148.00R.
Kiilunen, John P., to Weld Mold Company. Welding electrode holder and guide. 4,221,953, Cl. 219-125.100.
Kimball, Michael E.: *See—*
Finelli, Anthony F.; and Kimball, Michael E., 4,221,646, Cl. 204-159.190.
Kindel, Lennart; and Mansfield, William S., to LKB-Produkter AB. Trough to be used in a microtome or an ultramicrotome. 4,221,146, Cl. 83-167.000.
King, Terance M.: *See—*
Guzzetta, Joseph A.; Osborn, William P.; and King, Terance M., 4,221,517, Cl. 414-34.000.
Kioritz Corporation: *See—*
Ninagawa, Chikato; Ozaki, Tadashi; Yonekawa, Minoru; and Harada, Hitoshi, 4,221,639, Cl. 204-26.000.
Kirby, Shapiro, Eades and Cohen: *See—*
Hughes, John F., 4,221,609, Cl. 127-38.000.
Kirwan, George B., to Chesapeake and Ohio Railway Company, The; and Baltimore and Ohio Railroad Company, The. Apparatus for loosening frozen coal in hopper cars. 4,221,521, Cl. 414-375.000.
Kiselev, Boris A.: *See—*
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.
Kish, Gerald J.: *See—*
Sentle, Jesse W., Jr.; and Kish, Gerald J., 4,221,427, Cl. 296-181.000.
Kiss, Gunter H., to K.C.E. Kiss Consulting Engineers, Verfahrenstechnik GmbH. Apparatus for fabricating preformed objects from lignocellulose matted fiber fabrics. 4,221,556, Cl. 425-182.000.
Kitamura, Kenji: *See—*
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, 4,221,606, Cl. 106-288.00Q.
Kiuchi, Eichi; and Irabu, Takeru, to Nippon Electric Co., Ltd. Moving target indication radar. 4,222,050, Cl. 343-7.700.
Kiwala, Jacob: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,221,721, Cl. 260-345.100.
Kleber, Heinrich: *See—*
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Klimek, Boleslaw M.; and Campanini, Sergio, to Coulter Electronics, Inc. Pneumatic actuator. 4,221,158, Cl. 91-440.000.
Kline, Christopher, to Tandy Corporation. Power supply with current limiting. 4,222,003, Cl. 323-9.000.
Klinger AG: *See—*
Kruschik, Julius, 4,221,234, Cl. 137-219.000.
Klug, Frederic J.: *See—*
Greskovich, Charles D.; Klug, Frederic J.; and Pasco, Wayne D., 4,221,594, Cl. 106-40.00R.
Pasco, Wayne D.; and Klug, Frederic J., 4,221,748, Cl. 264-43.000.
Knowlton, Kenneth C., to Bell Telephone Laboratories, Incorporated. Progressive image transmission. 4,222,076, Cl. 358-263.000.
Kobayashi, Kesanao: *See—*
Shiba, Keisuke; and Kobayashi, Kesanao, 4,221,858, Cl. 430-266.000.
Kobayashi, Takashi: *See—*
Aida, Masaaki; Kobayashi, Takashi; Taneda, Yukinori; and Sugimoto, Noboru, 4,221,042, Cl. 29-564.400.
Kobayashi, Tomiji, to Taiyo Yuden Co., Ltd. Method of making a tubular capacitor. 4,221,033, Cl. 29-25.420.
Koch, Harald; Haertenberger, Ludolf; and Hanoefner, Anton, to Siemens Aktiengesellschaft. Device for moving sheet data carriers from and to stacks of sheets. 4,221,374, Cl. 271-4.000.
Koda, Hirokazu: *See—*
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,221,179, Cl. 112-158.00E.
Koebel, Thomas P. Metal coil spacer. 4,221,292, Cl. 206-386.000.
Koehler, Rudolf, to Bayerische Motoren Werke Aktiengesellschaft. Circuit arrangement for the control of a starting operation of a diesel engine. 4,221,205, Cl. 123-179.00H.
Koehler, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for pretreatment of light metals before galvanization. 4,221,845, Cl. 428-670.000.
Koehring Canada Limited: *See—*
Wildey, Allan J., 4,221,245, Cl. 144-34.00R.
Koenuma, Masao, to Asahi Seimitsu Kabushiki Kaisha. Universal parallel ruler with converted display of displacement. 4,221,056, Cl. 33-438.000.
Koester, Eberhard: *See—*
Autzen, Horst; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Rudolf, Peter; Sarnecki, Wilhelm; and Steck, Werner, 4,221,776, Cl. 423-634.000.
Kofink, Wolfgang, to Robert Bosch GmbH. Self-excited dynamo-electric machines with improved start-up characteristics. 4,222,001, Cl. 322-60.000.
Kogure, Katsura: *See—*
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,221,810, Cl. 424-284.000.
Koide, Hiroshi: *See—*
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Kolowski, Michael A.: *See—*
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Kominek, Leo A.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,221,868, Cl. 435-56.000.
Komiyama, Kunihiko; Kanai, Seikichi; and Okada, Masaru, to Kabushiki Kaisha Komatsu Seisakusho. Combustion chamber for an internal combustion engine of direct injection type. 4,221,190, Cl. 123-263.000.
Kompa, Gunter: *See—*
Balzau, Gerhard; Kompa, Gunter; Steinmann, Manfred; and Bode, Klaus, 4,221,509, Cl. 406-91.000.
Kondo, Kiyoshi; Tsunemoto, Daiei; and Fujisawa, Tamotsu, to Sagami Chemical Research Center. Process for preparing thiophene derivatives and thiophene derivatives obtained thereby. 4,221,915, Cl. 549-78.000.
Kondo, Shigeji, to Kakenyaku Kako Co., Ltd. Novel peptide type antibiotic and the process for the production thereof. 4,221,705, Cl. 260-112.50R.
Konishi, Tadao; and Otsumi, Yoshiharu, to Hitachi, Ltd. Scanning type electron microscope. 4,221,965, Cl. 250-311.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,221,864, Cl. 430-572.000.

Kononov, Igor V.: *See*—
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Koppel, Mikhail A.: *See*—
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Koppensteiner, James V.: *See*—
Jameel, Khaja M.; and Koppensteiner, James V., 4,222,020, Cl. 335-153.000.

Kostikov, Valery I.; Tarabanov, Alexandr S.; Ivanov, Vitaly A.; and Zykov, Anatoly M. Method of making antifriction products. 4,221,831, Cl. 427-314.000.

Koudelka, Slavos. Monorail mountain slide. 4,221,170, Cl. 104-63.000.

Koyama, Kunio: *See*—
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,221,611, Cl. 148-26.000.

Koyojidoki Kabushiki Kaisha: *See*—
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Kozakiewicz, Bernie A.: *See*—
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Kozuki, Susumu: *See*—
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Kraftwerk Union Aktiengesellschaft: *See*—
Rethy, Alexander, 4,221,534, Cl. 414-745.000.

Kraim, Jerry: *See*—
Loggins, Ted C., Jr.; and Kraim, Jerry, 4,221,574, Cl. 55-238.000.

Kramer, Melvin G., to Brunton Company, The. Data read-out system and apparatus useful for angular measurements. 4,221,328, Cl. 235-454.000.

Kranz, Max L., to Robertshaw Controls Company. Emergency escape breathing apparatus. 4,221,216, Cl. 128-201.230.

Kraus, Edmund J.: *See*—
Kraus, Robert A.; and Kraus, Edmund J., 4,221,115, Cl. 60-398.000.

Kraus, Robert A.; and Kraus, Edmund J. Altitude gas pressure differential power plant. 4,221,115, Cl. 60-398.000.

Kravchenko, Gennady V.: *See*—
Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A., 4,221,300, Cl. 212-192.000.

Kretschmer, Frank F., Jr.; and Lewis, Bernard L., to United States of America, Navy. Cascaded digital cancelers. 4,222,051, Cl. 343-100.0LE.

Krulwich, Lester S. Magnetic stamp pad applicator. 4,221,164, Cl. 101-109.000.

Kruschik, Julius, to Klinger AG. Closure valves for use in coaxial flow systems. 4,221,234, Cl. 137-219.000.

Krynski, Edward P., to D. Gottlieb & Co. Drop target assembly for pinball game. 4,221,384, Cl. 273-118.00D.

Ksenofontov, Mikhail A.: *See*—
Volodko, Leonid V.; Ksenofontov, Mikhail A.; Ostrovskaya, Ljudmila E.; Dzivitskaya, Galina G.; Goretsky, Igor D.; Khoruzhy, Vasily M.; Denisjuk, Nikolai M.; Volokh, Anatoly Y.; and Pogorelsky, Oleg N., 4,221,873, Cl. 521-103.000.

Kubo, Hirotugu, to Mitsuboshi Printing Ink Co., Ltd. Golden-colored printing ink. 4,221,593, Cl. 106-20.000.

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Yasuoka, Masahiro; and Okada, Yoshitsugu, 4,221,360, Cl. 251-305.000.

Kubota, Tokihito, to Kabushiki Kaisha Kubota Seisakusho. Cooling structure for a centrifuge. 4,221,325, Cl. 233-26.000.

Kuchar, Miroslav: *See*—
Grimova, Jaroslava; Nemecek, Oldrich; Kuchar, Miroslav; and Brunova, Bohumila, 4,221,919, Cl. 562-465.000.

Kuether, Roger F.: *See*—
Larson, Gerald L.; and Kuether, Roger F., 4,221,985, Cl. 310-171.000.

Kuhn, Patrick; and Schmidt, Donald K., to Clark Equipment Company. Vehicle and boom assembly. 4,221,353, Cl. 248-292.100.

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Kuipers, Johannes; and Dolman, Hendrik, to Duphar International Research. Composition for the treatment of soil or seed against phytophagous fungi. 4,221,801, Cl. 424-270.000.

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Dolman, Hendrik; and Kuipers, Johannes, 4,221,792, Cl. 424-249.000.

Kume, Toshiaki: *See*—
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Kunzel, Hans E.: *See*—
Elfert, Klaus; Wolf, Gerhard D.; Bentz, Francis; and Kunzel, Hans E., 4,221,903, Cl. 528-341.000.

Kuokkanen, Lauri: *See*—
Otala, Matti N. T.; and Kuokkanen, Lauri, 4,221,260, Cl. 165-11.00R.

Kupersmit, Julius B., to Container Systems Corp. Door construction for folding container. 4,221,302, Cl. 220-4.00F.

Kuphal, Wilko, to Siemens Aktiengesellschaft. Urological examination table. 4,221,371, Cl. 269-327.000.

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Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, 4,221,695, Cl. 260-42.140.
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, 4,221,841, Cl. 428-497.000.

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Shimizu, Tohru; Haji, Hideki; and Mochizuki, Fujiaki, 4,221,661, Cl. 210-721.000.

Kuriyama, Noboru, to Kabushiki Kaisha Tokuda Seisakusho. Sputtering device. 4,221,652, Cl. 204-298.000.

Kurnit, Norman A., to United States of America, Energy. Stokes injected Raman capillary waveguide amplifier. 4,222,011, Cl. 330-4.500.

Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Fujino, Haruo, to Nissan Motor Company, Limited. Multi-cylinder internal combustion engine having siamesed exhaust ports. 4,221,197, Cl. 123-316.000.

Kurreck, Manfred: *See*—
Mnilk, Reinhold; Kurreck, Manfred; Geltenpoth, Ulrich; and Keil, Manfred, 4,221,760, Cl. 264-524.000.

Kurtz, Rudiger; and Trudel, Wolfgang, to Escher Wyss GmbH. Pulp feed for a papermaking machine. 4,221,635, Cl. 162-343.000.

Kuzmenko, Julian V.: *See*—
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Breault, George O.; and Kwan, King C., 4,221,813, Cl. 424-309.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Tamura, Gakuzo; and Shimizu, Kenichi, 4,221,908, Cl. 542-426.000.

LaBarre, Ronald L., to Diamond Shamrock Corporation. Air-depolarized chlor-alkali cell operation methods. 4,221,644, Cl. 204-98.000.

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Besson, Raymond J., 4,221,986, Cl. 310-344.000.

Lacombat, Michel; and Volmier-Desperques, Serge, to Thomson-CSF. System for testing a pattern recorded on a plate. 4,221,487, Cl. 356-394.000.

LaFlesh, Richard C.: *See*—
Smith, Donald A.; and LaFlesh, Richard C., 4,221,174, Cl. 110-265.000.

Laipenieks, Juris, to Johns-Manville Corporation. Method and apparatus for controllably recycling the solids content of the effluent from an asbestos-cement products forming plant. 4,221,633, Cl. 162-154.000.

Lambert, Peter A.: *See*—
Garcia, Octavio G.; and Lambert, Peter A., 4,222,093, Cl. 362-147.000.

Lambertini, Giorgio; and Sala, Gianfranco, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa s.p.a. Process and apparatus for the production of additive-containing synthetic linear polymers. 4,221,692, Cl. 260-37.00N.

Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, to Bison-Werke, Bahre and Greten GmbH & Co. KG. Method and apparatus suitable for heating relatively poorly conducting substances. 4,221,950, Cl. 219-10.810.

Lambiris, Christos: *See*—
Greenwald, Harry; and Lambiris, Christos, 4,221,285, Cl. 194-1.00G.

Lamke, Arland D., to Magnetics International, Inc. Direct coupled drive for a magnetic separator. 4,221,664, Cl. 209-213.000.

Land, Ferdinand: *See*—
Riecke, Kurt; and Land, Ferdinand, 4,221,690, Cl. 260-29.70R.

Lang, Hans-Jorg; and Schwerdtel, Ernst, to Ludwig Schwerdtel GmbH. Apparatus for sealing cans with lids under vacuum. 4,221,102, Cl. 53-96.000.

Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Machine for forming wrap-around shipper packages. 4,221,107, Cl. 53-575.000.

Langen, Marinus J. M.; and Strauss, Edgars H., to H. J. Langen & Sons Ltd. Paperbag having articulated handle. 4,221,321, Cl. 229-54.00R.

Lanier Business Products, Inc.: *See*—
Mohammadioun, Said; Wittler, David A.; Titus, Theodore, IV; and Plunkett, Luther C., Jr., 4,221,938, Cl. 179-100.1DR.

Lanpher, Gary E.: *See*—
Schlereth, Fritz H.; and Lanpher, Gary E., 4,221,964, Cl. 250-290.000.

Lantz, Andre: *See*—
Commeyras, Auguste; Blancou, Hubert; and Lantz, Andre, 4,221,734, Cl. 260-408.000.

Larson, Gerald L.; and Kuether, Roger F., to Eaton Corporation. Vehicle tachometer generator. 4,221,985, Cl. 310-171.000.

Latchague, Guy, to S.A. Automobiles Citroen; and Societe Dite Automobiles Peugeot. Apparatus for removing a dead-head from a casting. 4,221,315, Cl. 225-97.000.

Latham, Elaine L.: *See*—
Latham, John F.; and Latham, Elaine L., 4,221,078, Cl. 47-41.00R.

Latham, John F.; and Latham, Elaine L. Sealed globular display device. 4,221,078, Cl. 47-41.00R.

Laurel Bank Machine Co., Ltd.: *See*—
Uchida, Isamu, 4,221,103, Cl. 53-212.000.

Lawler, John D.: *See*—
Gabriel, Anthony P.; and Lawler, John D., 4,221,924, Cl. 174-10.000.

Lawrence Fell Limited: *See*—
Fell, Don R.; and Takeuchi, Seiji, 4,221,296, Cl. 206-600.000.

Lawson, Kenneth D.; and Brown, Neil L., to Neil Brown Instruments Systems, Inc. Acoustic current meter. 4,221,128, Cl. 73-861.290.

Lazar, Remus I.; and Reichel, Richard C., to Velsicol Chemical Corporation. Dye compositions. 4,221,563, Cl. 8-582.000.

Lazar, Remus I.; and Reichel, Richard C., to Velsicol Chemical Corporation. Dye compositions containing a combination of dye assistants which includes a mixture of lower alkyl esters of aromatic carboxylic acids. 4,221,566, Cl. 8-582.000.

Le Carbone-Lorraine: *See*—
Slonina, Jean-Pierre; Girard, Pierre; Boucher, Jacques; and Gellon, Joseph, 4,221,622, Cl. 156-93.000.

Leadore, Toney E.: *See*—
Berlin, Aaron S., deceased; Berlin, Sara L., executrix; Berlin, Howard M., executor; Little, Vincent C.; and Leadore, Toney E., 4,221,167, Cl. 102-69.000.

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Ledniczki, Ferenc; Patak, Richard J.; and Wayne, Ronald G., to Touch Activated Switch Arrays, Inc. Touch activated controller and method. 4,221,975, Cl. 307-116.000.

Lee, George A.: *See*—
Baron, Lynne B.; and Lee, George A., 4,221,892, Cl. 525-531.000.

Lee, Henry L., Jr.; and Orlowski, Jan A., to Lee Pharmaceuticals. Carvable dental restorative compositions. 4,221,698, Cl. 260-42.520.

Lee, James K.: *See*—
Howe, Dennis G.; Thomas, Harold T.; and Lee, James K., 4,222,070, Cl. 358-128.500.

Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Recovery of lithium from brines. 4,221,767, Cl. 423-179.500.

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Bradbury, Christopher G., 4,221,753, Cl. 264-142.000.

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Swilley, Wilson H., 4,221,021, Cl. 17-45.000.

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Braski, David N.; and Leitnaker, James M., 4,221,610, Cl. 148-11.50N.

Lemal, Jeannine: *See*—
Vandecasteele, Jean-Paul; and Lemal, Jeannine, 4,221,869, Cl. 435-117.000.

Lemons, Carl R., to McDonnell Douglas Corporation. Sponge carrier adhesive process. 4,221,619, Cl. 156-71.000.

Lenk, Erich: *See*—
Schippers, Heinz; Bauer, Karl; Lenk, Erich; and Dammann, Peter, 4,221,345, Cl. 242-47.000.

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Cooper, Adrianus A. G.; and Leopold, Phillip M., 4,221,382, Cl. 273-73.00F.

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Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,221,950, Cl. 219-10.810.

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Lermann, Peter; Cocron, Istvan; Wagensonner, Eduard; Borowski, Kurt; and Huber, Theodor, to AGFA-Gevaert AG. Photographic camera with focussing system which time-multiplexes the signals from plural photodetectors. 4,221,474, Cl. 354-23.00D.

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Anglikowski, Ronald E.; Hui, George P.; Lese, Gregory; and Nash, Donald H., 4,221,932, Cl. 179-2.0EA.

Levitt, George, to Du Pont de Nemours, E. I., and Company. N-[(2,6-Dimethoxypyrimidin-4-yl)]aminocarbonyl benzene sulfonamides and their herbicidal compositions and methods of use. 4,221,585, Cl. 71-92.000.

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Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L., 4,221,927, Cl. 179-1.0VC.

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Erikson, J. Alden; Lewarchik, Ronald J.; and Birkmeyer, William J., 4,221,891, Cl. 525-514.000.

Lewis, Bernard L.: *See*—
Kretschmer, Frank F., Jr.; and Lewis, Bernard L., 4,222,051, Cl. 343-100.0LE.

Lewis, David L. Hot wire tongue and groove cutting apparatus. 4,221,148, Cl. 83-869.000.

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Finley, Donald W.; and Lewis, Robert B., 4,221,925, Cl. 174-68.500.

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Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., 4,221,053, Cl. 33-174.00L.

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Hauth, Wolfgang; and Ehrlinger, Wolfgang, 4,222,015, Cl. 333-1.100.
Rogowsky, York, 4,222,097, Cl. 363-51.000.

Liebersohn, Aharon: *See*—
Behar, Meir; Peshes, Ori; and Liebersohn, Aharon, 4,221,893, Cl. 525-438.000.

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Jahrig, Siegfried; and Liebig, Reinhard, 4,221,944, Cl. 200-303.000.

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Lindblad, Leif, 4,221,100, Cl. 52-748.000.

Limque, Ferdinand; and Bertrand, Hans, to Ipsen Industries International, Gesellschaft mit beschrankter Haftung. Aluminum soldering furnace. 4,221,561, Cl. 432-128.000.

Lin, Stephen Y., to Westvaco Corporation. Method for polymerization of lignin. 4,221,708, Cl. 260-124.00R.

Lindblad, Leif, to Lief Lindblad Entreprenend AB. Method for erecting an easily erectable and dismountable building. 4,221,100, Cl. 52-748.000.

Linden, Rolf W., to Medtronic, Inc. Cardiac monitoring apparatus. 4,221,223, Cl. 128-706.000.

Lindner, Daniel J.: *See*—
Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., 4,221,254, Cl. 152-209.00D.

Linhart, Otto C.: *See*—
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Lisle Corporation: *See*—
Pool, James L., 4,221,512, Cl. 408-83.500.

Little, Frank, to Harshaw Chemical Company, The. Multiple plate filter apparatus. 4,221,663, Cl. 210-193.000.

Little, Vincent C.: *See*—
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Liu, Wen P.: *See*—
Hamada, Roy; Sakai, Tad; and Liu, Wen P., 4,221,435, Cl. 301-37.0SS.

LKB-Produkter AB: *See*—
Kindel, Lennart; and Mansfield, William S., 4,221,146, Cl. 83-167.000.

Lo, Young S.; Walsh, David A.; and Welstead, William J., Jr., to A. H. Robins Company, Inc. Intermediate and process for the preparation of 7-acylindolin-2-ones. 4,221,716, Cl. 260-325.00R.

Lochte, Glen E.; and Horn, Charles E., to FMC Corporation. Pipe swivel joint with optional static seal. 4,221,408, Cl. 285-276.000.

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Cronin, Michael J., 4,222,039, Cl. 340-381.000.

Lodrick, Lawrence E. Match packaging. 4,221,289, Cl. 206-98.000.

Lodzinski, Fred P., to Nekoosa Papers Inc. Optical property measurement system and method. 4,222,064, Cl. 356-73.000.

Loe, Alton L., Jr., to Weyerhaeuser Company. Method and apparatus for determining the location of the chip level in a pulping digester. 4,221,632, Cl. 162-49.000.

Loeber, David E.: *See*—
Campbell, David S.; Loeber, David E.; and Tinker, Andrew J., 4,221,681, Cl. 260-4.0AR.

Loeser, Werner: *See*—
Autzen, Horst; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Rudolf, Peter; Sarnecki, Wilhelm; and Steck, Werner, 4,221,776, Cl. 423-634.000.

Logan Farm Equipment Co., Inc.: *See*—
Freeman, Carl D.; and Grover, Melvin G., 4,221,305, Cl. 221-131.000.

Logerot, Bernard A.; Pechard, Lucien L.; and Bouley, Jean-Claude A., to Bunker Ramo Corporation. Connector for printed circuit boards. 4,221,448, Cl. 339-75.0MP.

Loggins, Ted C., Jr.; and Kraim, Jerry, to Allis-Chalmers Corporation. Apparatus for removing particulates from the exhaust gases generated in drum mixers and aggregate dryers. 4,221,574, Cl. 55-238.000.

Lohest, Hans, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Apparatus and method for controlling textile winder package drive motors and traverse device motors. 4,221,344, Cl. 242-18.100.

Lohoff, Warren G. Multiplex system having digital coded power line signals. 4,222,035, Cl. 340-167.00R.

Long, Donald A.: *See*—
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,221,063, Cl. 40-21.00C.

L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,221,729, Cl. 260-396.00N.

Los, Marinus, to American Cyanamid Company. Imidazolinyl benzamides as herbicidal agents. 4,221,586, Cl. 71-92.000.

Louw, Wynand J.; van der Merwe, Douw G.; and Coetzee, Carel J. F., to South African Inventions Development Corporation. Electrical switching means. 4,221,980, Cl. 307-255.000.

Lowe, Colin F. Frameless metal building. 4,221,087, Cl. 52-90.000.

Lowrie, Neely E., to Combustion Engineering, Inc. Gas-liquid separator. 4,221,577, Cl. 55-392.000.

Lu, Chin H., to Xerox Corporation. Electrographic toner containing resin-compatible quaternary ammonium compound. 4,221,856, Cl. 430-110.000.

Lucas Industries Limited: *See—*
Beech, Keith J. W., 4,222,023, Cl. 336-209.000.
Silvertown, Cyril; and Sinclair, Walter, 4,222,000, Cl. 320-35.000.
Wright, Maurice J., 4,221,194, Cl. 123-478.000.

Ludke, Siegwalt: *See—*
Fielding, John O.; Erikson, Carl A.; Anthony, Thomas R.; Cline, Harvey E.; and Ludke, Siegwalt, 4,221,956, Cl. 219-388.000.

Ludwig Schwerdtel GmbH: *See—*
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Luhleich, Hartmut: *See—*
Dias, Francisco J.; and Luhleich, Hartmut, 4,221,689, Cl. 260-29.300.

Luikart, Walter W. Printers gauge. 4,221,057, Cl. 33-464.000.

Lund, Anders E.: *See—*
Haataja, Bruce A.; and Lund, Anders E., 4,221,751, Cl. 264-119.000.

Lundberg, Robert D.: *See—*
Makowski, Henry S.; Bock, Jan; and Lundberg, Robert D., 4,221,712, Cl. 260-23.50A.

Lusch, Johann, to RCA Corporation. Tuning position display system. 4,222,120, Cl. 455-154.000.

Lutron Electronics Co., Inc.: *See—*
Capewell, Dennis, 4,222,096, Cl. 363-44.000.

Lydiate, Jack, to ICI Australia Limited. Process for removing unsaturation from ion exchange resins containing unquaternized amino groups by hydrogenation with imine. 4,221,872, Cl. 521-32.000.

Lynch, John E.: *See—*
Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., 4,221,254, Cl. 152-209.00D.

M&T Chemicals Inc.: *See—*
de Graaf, Aart P., 4,221,839, Cl. 428-413.000.

MacAskill, Robert B., Jr.; and Cornell, Archie R., to Scott & Fetzer Company, The. Oil burner ignition and control package. 4,222,089, Cl. 361-263.000.

Mack, William: *See—*
Walter, Henry J.; and Mack, William, 4,221,050, Cl. 30-216.000.

Macken, John A. Multi-cavity laser mirror. 4,221,468, Cl. 350-292.000.

Macourt, Denis J. C. Mineral prospecting by the detection of radon or iodine. 4,221,482, Cl. 356-36.000.

MacPhee, Craig; and Cheng, Fred F., to Idaho Research Foundation, Inc. Fish culture by stickleback population eradication. 4,221,782, Cl. 424-127.000.

Madsen, Lamar, to Forest Medical Products, Inc. Linearly operable intermittent valve. 4,221,238, Cl. 137-627.500.

Maeda, Kiyoshi; and Fujisawa, Kyohei, to Dainippon Screen Seizo Kabushiki Kaisha. Method for stabilizing a modulated light ray. 4,221,960, Cl. 250-205.000.

Maejima, Hiroshi: *See—*
Kamo, Yoshihisa; Tsutsumi, Zenji; and Maejima, Hiroshi, 4,222,081, Cl. 360-67.000.

Magerl, Richard A., to Motorola, Inc. Microcomputer keyboard input circuitry. 4,222,038, Cl. 340-365.00S.

Magnetics International, Inc.: *See—*
Lamke, Arland D., 4,221,664, Cl. 209-213.000.

Magnum Tooling Systems, Inc.: *See—*
Oliver, Peter M., 4,221,141, Cl. 82-2.500.

Maillard, Gilbert, to Thomson-CSF. Variable inductor. 4,222,022, Cl. 336-139.000.

Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, to Janome Sewing Machine Co. Ltd. Sewing machine with stitch-pattern control circuitry. 4,221,177, Cl. 112-158.00E.

Makhteshim Chemical Works Limited: *See—*
Behar, Meir; Peshes, Ori; and Liebersohn, Aharon, 4,221,893, Cl. 525-438.000.

Makino, Masayasu: *See—*
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Makkens, Lothar: *See—*
Attinger, Manfred; Niemann, Gert; Makkens, Lothar; Eisenacher, Werner; and Fraubose, Fritz, 4,221,850, Cl. 429-160.000.

Makosch, G/nter: *See—*
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Makosch, Gunter: *See—*
Jaerisch, Walter; and Makosch, G/nter, 4,221,486, Cl. 356-357.000.

Makowski, Henry S.; Bock, Jan; and Lundberg, Robert D., to Exxon Research & Engineering Co. Process for forming a metal sulfonate containing EPDM. 4,221,712, Cl. 260-23.50A.

Malachowski, Michael A.: *See—*
Kamath, Venkatesh H.; Malachowski, Michael A.; and Vorndran, Charles P., 4,221,378, Cl. 271-220.000.

Malaval, Claude, to Groupement Atomique Alsacienne Atlantique. Liquid absorbent safety rod for a nuclear reactor. 4,221,637, Cl. 176-86.00L.

Malavasi, Stuart H. Portable self-contained security system. 4,222,043, Cl. 340-568.000.

Malaysian Rubber Producers' Research Association, The: *See—*
Campbell, David S.; Loeber, David E.; and Tinker, Andrew J., 4,221,681, Cl. 260-4.0AR.

Malczewski, Donna J. Fluid flow and viscosity display toy. 4,221,073, Cl. 46-1.00R.

Maldavs, Ojars, to Gould Inc. Quick disconnect coupling. 4,221,235, Cl. 137-614.040.

Malhotra, Sudarshan K.: *See—*
Van Heertum, John C.; and Malhotra, Sudarshan K., 4,221,799, Cl. 424-263.000.

Mallard, Robert G. Lug strap connector for looms. 4,221,241, Cl. 139-151.000.

Mallow, William A., to Pullman Incorporated. Additive for improved performance of silicate cement. 4,221,597, Cl. 106-74.000.

Malm, Curtis L., to Gillette Company, The. Two ended retractable writing instrument. 4,221,490, Cl. 401-29.000.

Mamula, Ronald S.; and Dotson, Samuel C., to Andco Incorporated. Hot blast stove erection process. 4,221,537, Cl. 414-786.000.

Manabe, Daisuke; Asai, Shuji; and Suga, Michihisa, to Nippon Electric Co., Ltd. Electrophotographic plate produced by firing glass binder containing inorganic photoconductor and high melting point inorganic additive in non-reducing atmosphere. 4,221,855, Cl. 430-56.000.

Mandelbaum, Isidore. Anchoring and occluding surgical dressing. 4,221,215, Cl. 128-155.000.

Manerba, Giancarlo. Method for making a great capacity bag and the related improved bag. 4,221,250, Cl. 150-3.000.

Mangiavacchi, Jacques, to Glaenzer Spicer. Cardan joint of the block bearing type. 4,221,119, Cl. 64-17.00R.

Mansfeld, Florian B.; and Roe, David K., to Rockwell International Corporation. Electrochemical cell for measuring hydrogen in metal. 4,221,651, Cl. 204-195.00C.

Mansfield, William S.: *See—*
Kindel, Lennart; and Mansfield, William S., 4,221,146, Cl. 83-167.000.

Manzoni, Pierluigi: *See—*
Vargiu, Silvio; and Manzoni, Pierluigi, 4,221,829, Cl. 427-222.000.

Marathon Oil Company: *See—*
Dreher, Karl D.; and Gogarty, William B., 4,221,229, Cl. 137-13.000.

Marcel Boschung, Firma: *See—*
Boschung, Marcel, 4,222,044, Cl. 340-581.000.

Marchais, Jean-Claude: *See—*
Sirven, Jacques; and Marchais, Jean-Claude, 4,222,049, Cl. 343-7.700.

Marchal, Lucien: *See—*
Rodriguez, Ludovic; and Marchal, Lucien, 4,221,789, Cl. 424-244.000.

Marconi Company Limited, The: *See—*
Watson, Barry K.; and Powell, Ian L., 4,222,018, Cl. 333-251.000.

Margotte, Dieter: *See—*
Adelmann, Siegfried; Margotte, Dieter; Rosenkranz, Hans J.; Vernaleken, Hugo; Nouvertne, Werner; and Freitag, Dieter, 4,221,645, Cl. 204-159.140.

Marowski, Raymond M.: *See—*
Engle, Vencil D.; Marowski, Raymond M.; Pollard, Edward E.; and Pullen, John L., 4,221,489, Cl. 400-636.300.

Marquis, Harold E., III; and Nguyen, Nhiem D., to Caterpillar Tractor Co. Vibration isolator. 4,222,029, Cl. 340-52.00R.

Mars, Incorporated: *See—*
Heiman, Frederic P., 4,221,227, Cl. 133-3.00D.

Marsh, Brian: *See—*
Wright, Donald C.; Marsh, Brian; and Young, Rodney L. D., 4,221,579, Cl. 65-114.000.

Marshall, Claude J., Jr., to Rockwell International Corporation. Simulated wire wheel cover. 4,221,436, Cl. 301-37.0SS.

Martens, Henry J.; and Vandebult, Jan, to I. D. Engineering, Inc. Anti-theft locking device. 4,221,025, Cl. 24-150.00R.

Martin, Pierre: *See—*
Drabek, Jozef; Greuter, Hans; and Martin, Pierre, 4,221,812, Cl. 424-304.000.

Martin, Robert B., to Petrolite Corporation. Media regeneration in electrofiltration. 4,221,648, Cl. 204-186.000.

Martin, Robert P., Jr. Lift truck cab with movable back wall portion. 4,221,274, Cl. 180-69.00R.

Martineau, Tom N., to Stoelting, Inc. Aerator proportioner for frozen comestible freezers. 4,221,117, Cl. 62-306.000.

Martinez, Leobardo C.: *See—*
Verdugo, Marco A. F.; and Martinez, Leobardo C., 4,221,366, Cl. 266-197.000.

Maruzen Oil Co., Ltd.: *See—*
Minagawa, Motomobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,221,700, Cl. 260-45.7PH.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Heissler, Herbert; Wurtinger, Horst; and Schaab, Karl H., 4,221,623, Cl. 156-169.000.

Maschinenfabrik & Eisengiesserei Ed. Mezger AG: *See—*
Mezger, Fritz, 4,221,309, Cl. 222-604.000.

Mason, Elmer B. Stator for multiple rotor D. C. magnetic motor. 4,221,984, Cl. 310-112.000.

Masopust, Otto T., Jr.: *See*—
Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., 4,221,034, Cl. 29-25.420.

Massachusetts Institute of Technology: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,221,784, Cl. 424-199.000.

Massarani, Elena: *See*—
Nardi, Dante; Massarani, Elena; Tajana, Alberto; and Veronese, Mario, 4,221,803, Cl. 424-273.00R.

Mastercrafters Corporation: *See*—
Davidson, Samuel L., 4,221,014, Cl. 9-1.100.

Mastropieri, Antonio. Device for automatically returning a transmission control to neutral. 4,221,277, Cl. 180-273.000.

Matson Navigation Company: *See*—
Brown, James A.; and Frentzel, Herman E., 4,221,515, Cl. 410-32.000.

Matsui, Hirotoshi: *See*—
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,221,179, Cl. 112-158.00E.

Matsukawa, Hiroharu: *See*—
Hoshi, Yoshiyuki; and Matsukawa, Hiroharu, 4,221,710, Cl. 260-17.300.

Matsumoto, Takehiko; and Haba, Hiroshi, to Sanshin Electric Co., Ltd. Frequency synthesizer type receiver having a channel selection device. 4,222,121, Cl. 455-164.000.

Matsumoto, Zenji: *See*—
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.

Matsuno, Takashi: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.

Matsuo, Syunji: *See*—
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,221,864, Cl. 430-572.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hirashima, Masayoshi, 4,222,073, Cl. 358-145.000.

Matsushita Electric Works, Ltd.: *See*—
Hamashima, Tetsuo, 4,221,049, Cl. 30-195.000.

Matthey Bishop, Inc.: *See*—
Mundy, Joseph, 4,221,843, Cl. 428-594.000.

Matz, Wayne C.: *See*—
Phillipp, Robert G.; Hellman, Wayne R.; Matz, Wayne C.; and Bacharowski, Walter, Jr., 4,221,993, Cl. 315-73.000.

Mayer, Gyorgy; and Nemeskeri, Laszlo, to Baranya Megyei Allami Epitoipari Vallalat. Process for making a large post-tensioned floor bay consisting of a number of prefabricated reinforced-concrete floor elements. 4,221,098, Cl. 52-741.000.

Mazzeo, Charles F.; and Waddington, William T., to Amerace Corporation. Screwdriver attachment. 4,221,249, Cl. 145-50.00D.

McClure, Charles A. Flow monitoring. 4,221,127, Cl. 73-861.000.

McCornack, John C.: *See*—
Hafele, Joseph C.; and McCornack, John C., 4,221,195, Cl. 123-254.000.

McCoy, Bryan L.: *See*—
Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L., 4,221,927, Cl. 179-1.0VC.

McCoy, Darl M.; and Hawk, Charles W., Jr., to Olin Corporation. Method of securing a Moineau pump stator. 4,221,036, Cl. 29-156.4WL.

McDonnell Douglas Corporation: *See*—
Lemons, Carl R., 4,221,619, Cl. 156-71.000.

McFadden, Francis J., to Minnesota Mining and Manufacturing Company. Optical microbiological testing apparatus and method. 4,221,867, Cl. 435-32.000.

McFee, William R. Method of handling baggage. 4,221,536, Cl. 414-786.000.

McIntosh, James: *See*—
Benson, Mason; and McIntosh, James, 4,222,040, Cl. 340-384.00E.

McKenzie, Thomas C.; and Brown, John J., to American Cyanamid Company. 11-(1,2,3,6-Tetrahydro-substituted-4-pyridyl)-dibenz[b,f][1,4]oxazepines. 4,221,714, Cl. 260-244.400.

McKenzie, Thomas C.; Crawley, Lantz S.; and Brown, John J., to American Cyanamid Company. Substituted dibenz[b,f][1,4]oxazepin-11-yl pyridinium salts and derivatives thereof. 4,221,715, Cl. 260-244.400.

McLean, Colin D., to ICI Australia Limited. Hydrophobic explosive composition and method of making. 4,221,616, Cl. 149-2.000.

McNair, Robert J., Jr., to Avco Corporation. Internal combustion engine with sustained power stroke. 4,221,198, Cl. 123-285.000.

McSherry, Thomas W., to Mechanical Plastics Corp. Fastening element with anti-jacking device. 4,221,154, Cl. 85-80.000.

McWilliams, Joseph A., to Micropore International Limited. Thermal insulation containing silica aerogel and alumina. 4,221,672, Cl. 252-62.000.

Mead Corporation, The: *See*—
Gudorf, James L., 4,222,058, Cl. 346-75.000.

Meal, John R.: *See*—
Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., 4,221,034, Cl. 29-25.420.

Mechanical Plastics Corp.: *See*—
McSherry, Thomas W., 4,221,154, Cl. 85-80.000.

Medi-Technical Corporation: *See*—
Hill, James J., 4,222,099, Cl. 363-101.000.

Medina, Conrad R., to Swingline, Inc. Corrugated fastener and strip of fasteners. 4,221,153, Cl. 85-11.000.

Medtronic, Inc.: *See*—
Linden, Rolf W., 4,221,223, Cl. 128-706.000.

Mego Corp.: *See*—
Wong, Tit-Shing, 4,221,454, Cl. 339-176.00R.

Meinan Machinery Works, Inc.: *See*—
Katsuji, Hasegawa, 4,221,247, Cl. 144-211.000.

Meisner, Alfred; and Arnold, Werner, to DIEHL, Firma. Control device for rapidly setting an electronic digital display. 4,222,010, Cl. 328-140.000.

Meitzner, Erich F.; and Oline, James A., to Rohm and Haas Company. Reticular crosslinked monovinylidene N-heterocyclic copolymer. 4,221,871, Cl. 521-29.000.

Melloh, Wilhelm; and Reinisch, Wolfgang. Betaines exhibiting improved skin-protecting characteristics. 4,221,733, Cl. 260-404.500.

Melson, James L. Carrier for remote controlier. 4,221,281, Cl. 191-12.00R.

Menefee, Charles M.: *See*—
Galer, Herbert W.; and Menefee, Charles M., 4,221,286, Cl. 198-377.000.

Merchant, Stanley R.: *See*—
Heiney, Elmer T., III; Merchant, Stanley R.; and Green, Wells L., 4,222,026, Cl. 338-34.000.

Merck & Co., Inc.: *See*—
Breault, George O.; and Kwan, King C., 4,221,813, Cl. 424-309.000.
Cragoe, Edward J., Jr.; Smith, Robert L.; and Stokker, Gerald E., 4,221,790, Cl. 424-246.000.

Merrell Toraude et Compagnie: *See*—
Bey, Philippe; and Jung, Michel, 4,221,914, Cl. 548-342.000.

Mesne Koh-I-Noor Rapidograph, Inc.: *See*—
Anderka, Gerold; Ritter, Hans-Joachim; and Zuchner, Werner, 4,221,496, Cl. 401-258.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Moser, Werner; v.Tein, Volker; Dirlewanger, Albert; Offenbeck, Hans; and Stoeckle, Walter, 4,221,350, Cl. 244-50.000.

Meszaros, Csilla: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.

Metal Bellows Corporation: *See*—
Tucker, Elton M., 4,221,219, Cl. 128-260.000.

Metal Closures Limited: *See*—
Guest, John H., 4,221,105, Cl. 53-488.000.

Metallwerke Max Brose GmbH & Co.: *See*—
Becker, Herbert, 4,221,079, Cl. 49-351.000.

Metzeler Kautschuk AG: *See*—
Rost, Harry, 4,221,627, Cl. 156-507.000.

Meurer, Charles L. Upright circular tube settler with stacked tube modules. 4,221,671, Cl. 210-522.000.

Meyer, Gustavo A.; Peters, Mark A.; and Leaver, Helen S., to Amax Inc. Purification of nickel chloride solutions. 4,221,765, Cl. 423-24.000.

Meyer, John J., to Nooter Corporation. Tube-type vessel and method of joining the tubes to the tubesheets in such vessels. 4,221,263, Cl. 165-173.000.

Meyer, Otto, to Pierburg GmbH & Co., KG. Thermal timer valve. 4,221,204, Cl. 123-568.000.

Meyer, Sharon A.: *See*—
Pearson, Michael B.; Meyer, Sharon A.; and Shell, Francis J., 4,221,823, Cl. 427-4.000.

Mezger, Fritz, to Maschinenfabrik & Eisengiesserei Ed. Mezger AG. Ladle tilting apparatus. 4,221,309, Cl. 222-604.000.

Mezrich, Reuben S., to RCA Corporation. Apparatus for dividing an arbitrary waveform into equal-amplitude steps. 4,222,008, Cl. 328-28.000.

Michigan Technological University, Board of Control of: *See*—
Haataja, Bruce A.; and Lund, Anders E., 4,221,751, Cl. 264-119.000.

Micropore International Limited: *See*—
McWilliams, Joseph A., 4,221,672, Cl. 252-62.000.

Middeldorf, Martin: *See*—
Flaig, Heinz; Middeldorf, Martin; and Dietrich, Udo, 4,221,171, Cl. 104-130.000.

Mifune, Hiroyuki: *See*—
Okutsu, Eiichi; Akimura, Yoshitaka; Takada, Shunji; and Mifune, Hiroyuki, 4,221,857, Cl. 430-264.000.

Mihalic, William T.: *See*—
Buuck, Bryce A.; Mihalic, William T.; and Clark, David P., 4,221,199, Cl. 123-90.160.

Mikkers, Johannes C. J., to U.S. Philips Corporation. Glide path lighting system. 4,222,027, Cl. 340-26.000.

Miles, Edward J. Oribital pump with fluid flow control. 4,221,553, Cl. 418-61.00R.

Miles Laboratories, Inc.: *See*—
Warren, Brian T.; Spicer, John W.; and Miller, Thomas, 4,221,800, Cl. 424-269.000.

Miles, Ronald C.; and Carpenter, Larry D., to Olin Corporation. Process for the preparation of low hydrogen overvoltage cathodes. 4,221,643, Cl. 204-98.000.

Milkovich, Ralph: *See*—
Bi, Le-Khac; and Milkovich, Ralph, 4,221,884, Cl. 525-314.000.

Miller, Diane. Extendable vehicle lateral side guard. 4,221,412, Cl. 293-118.000.
Miller, Jack V.; and Miller, Mark R. Simulated vehicle radar transceiver. 4,221,380, Cl. 272-8.00N.
Miller, Mark R.: *See—*
Miller, Jack V.; and Miller, Mark R., 4,221,380, Cl. 272-8.00N.
Miller, Paul W., to Hairegenics, Inc. Method of implanting hair. 4,221,212, Cl. 128-1.00R.
Miller, Thomas: *See—*
Warren, Brian T.; Spicer, John W.; and Miller, Thomas, 4,221,800, Cl. 424-269.000.
Miller, Victoria: *See—*
Sanford, Carl C., Jr., 4,221,173, Cl. 108-113.000.
Millner, Ozra E., Jr.: *See—*
Alaimo, Robert J.; Storrin, Ronald J.; and Millner, Ozra E., Jr., 4,221,730, Cl. 260-397.70R.
Milne, James A., to Pace Incorporated. Method of providing sub-floor with decorative floor panels. 4,221,620, Cl. 156-71.000.
Minagawa, Motomobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, to Maruzen Oil Co., Ltd. Stabilized polymer composition. 4,221,700, Cl. 260-45.7PH.
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Nakazawa, Kenji, to Argus Chemical Corp. Anti-yellowing composition. 4,221,687, Cl. 260-23.0XA.
Minakawa, Hiroshi, to Sharp Kabushiki Kaisha. Abnormal temperature detection and microwave generation suppression in a microwave oven. 4,221,949, Cl. 219-10.55C.
Minami, Don S.: *See—*
Handen, Carl; Minami, Don S.; and Treder, John D., 4,221,376, Cl. 271-149.000.
Minami, Syuji: *See—*
Ushida, Yoshihisa; Odawara, Kiyoshi; Kashiwa, Norio; Toyota, Akinori; and Minami, Syuji, 4,221,894, Cl. 526-125.000.
Minder, Emile A., to Erhardt & Spiess, Werkzeug- und Maschinenbau GmbH & Co. Tool carrier. 4,221,142, Cl. 82-36.00R.
Ministry of International Trade & Industry: *See—*
Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,221,678, Cl. 252-466.0PT.
Minnesota Micro Metal, Inc.: *See—*
Frantzen, John J., 4,221,084, Cl. 51-392.000.
Minnesota Mining and Manufacturing Company: *See—*
Clampitt, Russell F.; Kalash, Edwin; Schuette, Dennis C.; and Straub, Melvin J., 4,221,349, Cl. 242-192.000.
McFadden, Francis J., 4,221,867, Cl. 435-32.000.
Moeller, Gary D., 4,221,348, Cl. 242-192.000.
Mishina, Tetsuo: *See—*
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, 4,221,606, Cl. 106-288.00Q.
Mitchell, John C.; and Terning, Thomas N. Motorcycle controlling sidecar for handicapped persons. 4,221,276, Cl. 180-209.000.
Mitchell, Robert B.; and Swank, Harry R., to GTE Products Corporation. Implosion-resistant cathode ray tube structure and fabrication process. 4,222,075, Cl. 358-246.000.
Mitel Corporation: *See—*
Vaughan, Brian J. N., 4,221,936, Cl. 179-18.0AD.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kii, Masami, 4,221,943, Cl. 200-148.00R.
Onishi, Ken; and Tanaka, Kunimaro, 4,222,079, Cl. 360-32.000.
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Asamoto, Tetsuhiro; and Uebayashi, Takeo, 4,221,952, Cl. 219-69.00G.
Mitsuboshi Printing Ink Co., Ltd.: *See—*
Kubo, Hirotugu, 4,221,593, Cl. 106-20.000.
Mitsui Petrochemical Industries Ltd.: *See—*
Ushida, Yoshihisa; Odawara, Kiyoshi; Kashiwa, Norio; Toyota, Akinori; and Minami, Syuji, 4,221,894, Cl. 526-125.000.
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, to Sharp Kabushiki Kaisha. Button size control in an automatic electronic sewing machine. 4,221,179, Cl. 112-158.00E.
Miyazaki, Masaaki: *See—*
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Mizutani, Shigemitsu: *See—*
Shimizu, Shigehisa; and Mizutani, Shigemitsu, 4,221,145, Cl. 83-71.000.
Mnilk, Reinhold; Kurreck, Manfred; Geltenpoth, Ulrich; and Keil, Manfred, to Holstein & Kappert GmbH. Method of making, filling and closing containers of thermoplastic material. 4,221,760, Cl. 264-524.000.
Mobus, Dietmar; Ehrenberger, Gunter; and Jobst, Wolfgang, to General Motors Corporation. Illuminated electric switches. 4,221,945, Cl. 200-316.000.
Mochizuki, Fujiaki: *See—*
Shimizu, Tohru; Haji, Hideki; and Mochizuki, Fujiaki, 4,221,661, Cl. 210-721.000.
Modica, Giovanni: *See—*
De Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,221,642, Cl. 204-98.000.
Moedritzer, Kurt, to Monsanto Company. Phospholane oxide containing polymers. 4,221,874, Cl. 521-108.000.
Moeller, Gary D., to Minnesota Mining and Manufacturing Company. Belt driven tape cartridge. 4,221,348, Cl. 242-192.000.
Mohammadioun, Said; Wittler, David A.; Titus, Theodore, IV; and Plunkett, Luther C., Jr., to Lanier Business Products, Inc. Central control system for a dictation device with plural dictators and plural recorders. 4,221,938, Cl. 179-100.1DR.
Monin, Andre. Toy producing a driver's section of a vehicle. 4,221,072, Cl. 46-1.00B.
Monsanto Company: *See—*
Gaertner, Van R.; and Phillips, Wendell G., 4,221,583, Cl. 71-86.000.
Moedritzer, Kurt, 4,221,874, Cl. 521-108.000.
Tokas, Edward F., 4,221,878, Cl. 525-1.000.
Tokas, Edward F., 4,221,905, Cl. 528-498.000.
Moore, John F., to E M I Limited. Radiography. 4,222,104, Cl. 364-414.000.
Morgan, Jerry A. Tape cartridge holder. 4,221,440, Cl. 312-11.000.
Mori, Takashi: *See—*
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Morris, Kenneth A. Apparatus for retrieving balls. 4,221,524, Cl. 414-439.000.
Morrison, Douglas I.; and Gergely, William, Jr., to Pitney Bowes Inc. Copy sheet handling apparatus for a copier. 4,221,375, Cl. 271-127.000.
Morrison, George W., to Universal Truck Body, Inc. Refuse truck body. 4,221,527, Cl. 414-517.000.
Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; Storrin, Ronald J.; and Millner, Ozra E., Jr., 4,221,730, Cl. 260-397.70R.
Moser, Otto W.: *See—*
Von Tomkewitsch, Romuald; and Moser, Otto W., 4,222,041, Cl. 340-517.000.
Moser, Werner; v.Tein, Volker; Dirlewanger, Albert; Offenbeck, Hans; and Stoeckle, Walter, to Messerschmitt-Bolkow-Blohm GmbH. Automatic direction stabilization system. 4,221,350, Cl. 244-50.000.
Moskowitz, Francine: *See—*
Moskowitz, William; and Moskowitz, Francine, 4,221,060, Cl. 35-17.000.
Moskowitz, William; and Moskowitz, Francine. Children's dental instructional kit. 4,221,060, Cl. 35-17.000.
Motorola, Inc.: *See—*
Chamberlin, George P., 4,222,103, Cl. 364-200.000.
Groves, Stanley E., 4,222,116, Cl. 375-55.000.
Gurtler, Richard W., 4,221,471, Cl. 350-331.00R.
Magerl, Richard A., 4,222,038, Cl. 340-365.00S.
Parkinson, Ward D., 4,221,977, Cl. 307-238.000.
Stein, Marc T., 4,222,095, Cl. 363-8.000.
Mott, Charles L.; and Kozakiewicz, Bernie A., to Dow Chemical Company, The. Impact polymer process. 4,221,883, Cl. 525-243.000.
Mould, Henry M., to Perkin-Elmer Limited. Selection of spectrophotometric operating parameters. 4,221,484, Cl. 356-319.000.
Moulton, Robert K.; and Thompson, John W., to Sperry Corporation. Phase lock loop preconditioning circuit. 4,222,009, Cl. 328-72.000.
Mourier, Georges, to Thomson CSF. Electrical machine. 4,221,983, Cl. 310-72.000.
Mrozowski, Andrij; Naylor, Jimmy R.; and Prazak, Paul R., to Burr-Brown Research Corporation. Method and apparatus for automatically calibrating a digital to analog converter. 4,222,107, Cl. 364-571.000.
Mueller, Paul A.; Hartz, John R.; Pawlowski, Elaine D.; and Freedman, M. David, to Bendix Corporation, The. Lumber inspection and optimization system. 4,221,974, Cl. 250-563.000.
Muller Hans, to Grapha-Holding AG. Apparatus for folding paper sheets or the like. 4,221,373, Cl. 270-86.000.
Mumpower, Robert C., II: *See—*
Kiefer, John E.; and Mumpower, Robert C., II, 4,221,226, Cl. 131-267.000.
Mundy, Joseph, to Matthey Bishop, Inc. Construction of elliptical metal substrates. 4,221,843, Cl. 428-594.000.
Murakami, Yasushi: *See—*
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Murdock, Bradley R., to Diamond Power Specialty Corporation. Reflective insulation assembly. 4,221,094, Cl. 52-474.000.
Murphy, John A., Jr. Solar collector assembly. 4,221,208, Cl. 126-432.000.
Muskulus, Willi, to Balzer & Droll KG. Device for winding stators or the like. 4,221,243, Cl. 140-92.100.
Myers, Ronald W.: *See—*
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Nagai, Michiko: *See—*
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,221,810, Cl. 424-284.000.
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, to Nippon Steel Corporation. Non-fused flux composition for submerged-arc welding. 4,221,611, Cl. 148-26.000.
Nagano, Satoshi: *See—*
United States of America, National Aeronautics and Space Administration; and Nagano, Satoshi, 4,222,098, Cl. 363-71.000.
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Nakaya Sangyo Kabushiki Kaisha: *See*—
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Namiki Precision Jewel Co., Ltd.: *See*—
Imaizumi, Nobuo; and Wakana, Kazuo, 4,221,613, Cl. 148-103.000.

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Narasimhan, Mandayam C., to Allied Chemical Corporation. Continuous casting method for metallic amorphous strips. 4,221,257, Cl. 164-87.000.

Nardi, Dante; Massarani, Elena; Tajana, Alberto; and Veronese, Mario, to Recordati, S.A. Substituted dibenzyl ethers and pharmaceutical compositions containing said ethers for the treatment of infections. 4,221,803, Cl. 424-273.00R.

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Jasper, Allen L., 4,221,363, Cl. 254-98.000.

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Parramore, Thomas S., 4,221,048, Cl. 30-135.000.
Wardill, Gordon A., 4,221,426, Cl. 296-178.000.

Natmar, Inc.: *See*—
Clay, Bobby J., 4,221,626, Cl. 156-366.000.

Natoli, Richard A.: *See*—
Graeser, Joseph H., Jr.; Natoli, Richard A.; and Adkins, Robert J., 4,222,056, Cl. 343-767.000.

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Mrozowski, Andrij; Naylor, Jimmy R.; and Prazak, Paul R., 4,222,107, Cl. 364-571.000.

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Neeff, Wolf-Rainer: *See*—
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Nemec, James: *See*—
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Neumann, Siegmar. Cover pane for solar collectors. 4,221,466, Cl. 350-167.000.

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Neuroth, Charles G.: *See*—
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Simon, Lionel N.; and Hadden, John W., 4,221,794, Cl. 424-253.000.

Nguyen, Nhiem D.: *See*—
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Nidy, Robert K. Shuffleboard game apparatus. 4,221,385, Cl. 273-126.00R.

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Niemi, Bill H.: *See*—
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,221,543, Cl. 417-22.000.

Nihon Kogyo Kabushiki Kaisha: *See*—
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Nikolaus, Harold W.: *See*—
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Niles, Paul D.; Whallon, William P., Jr.; and Normann, Richard W., to Bendix Corporation, The. Electrical connector assembly. 4,221,446, Cl. 339-49.00R.

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Nippon Electric Co., Ltd.: *See*—
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Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Inoue, Akira; Suzuki, Takehiko; Saito, Koichi; Aoki, Yukio; Ono, Tetsuji; and Ohara, Takashi, 4,221,768, Cl. 423-239.000.

Nippon Steel Corporation: *See*—
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Nippondenso Co., Ltd.: *See*—
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Nishimura, Yosaku, to Kabushiki Kaisha Toa Kiaki Seisakusho. Chain block. 4,221,364, Cl. 254-338.000.

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Asano, Masaharu; and Aono, Shigeo, 4,221,191, Cl. 123-492.000.
Ezoe, Mitsuhiko; and Hosaka, Akio, 4,221,193, Cl. 123-483.000.
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Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,221,810, Cl. 424-284.000.

Niwa, Shuichi: *See*—
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Noguchi, Tsutomu: *See*—
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Nordkvist, Kjell E.; and Skog, Lars H., to Saab-Scania Aktiebolag. Device for facilitating gear changing in gear boxes. 4,221,283, Cl. 192-4.00C.
Norman, Paula R.; and Ginter, Sally P., to Dow Chemical Company, The. Backside antistatic coated film bearing a light sensitive emulsion. 4,221,861, Cl. 430-529.000.
Normann, Richard W.: *See*—
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Northrop Corporation: *See*—
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Nosler, John C. Linear array signal processing circuitry for locating the midpoint of a source of light. 4,221,973, Cl. 250-560.000.
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Nowak, Welville B. Method for producing solid ribbons. 4,221,754, Cl. 264-164.000.
NRM Corporation: *See*—
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Nudd, Howard W., Jr.: *See*—
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Nunlist, Erwin J.; Coleman, Howard G.; and Harrison, Edward S., to Sybron Corporation. Separable blade agitator and method and means for assembly. 4,221,488, Cl. 366-343.000.
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Jacoby, Charles H., 4,221,433, Cl. 299-4.000.
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Ogasawara, Toshichika: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, to Tokyo Shibaura Electric Company, Limited. Method and apparatus for forming spherical particles of thermoplastic material. 4,221,554, Cl. 425-7.000.
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Ohta, Motomu, to Central Automotive Industries Ltd. Refrigerant compressor. 4,221,544, Cl. 417-269.000.
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Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, to Kabushiki Kaisha Komatsu Seisakusho. Warning device for a vehicle. 4,222,031, Cl. 340-52.00F.
Okazaki, Akira: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Okimune, Katutosi, to Sanyo Special Steel Co., Ltd. Water cooled panel used in an electric furnace. 4,221,922, Cl. 13-32.000.
Okumura, Akia: *See*—
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Okuno, Yoshihiro, to RCA Corporation. FM Defect compensation apparatus. 4,221,930, Cl. 179-1.0GB.
Okutsu, Eiichi; Akimura, Yoshitaka; Takada, Shunji; and Mifune, Hiroyuki, to Fuji Photo Film Co., Ltd. Process for producing a high contrast photographic image. 4,221,857, Cl. 430-264.000.
Olander, Walter K., to General Electric Company. Complexed manganese catalyst. 4,221,735, Cl. 260-429.00C.
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Oliver, Peter M., to Magnum Tooling Systems, Inc. Method and apparatus for feeding bar stock to a machine tool. 4,221,141, Cl. 82-2.500.
Olney, Robert S., to Atlas Powder Company. Microbubble feeding apparatus and method. 4,221,507, Cl. 406-33.000.
Olsen, Everett O.; and Nudd, Howard W., Jr., to Foxboro Company, The. Vibratory-wire pressure sensor. 4,221,133, Cl. 73-704.000.
Olsson, Jan T.: *See*—
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Ondria, John, to Alpha Industries, Inc. Microwave/millimeterwave oscillator using transferred electron device. 4,222,014, Cl. 331-107.0DP.
Ongaro Dynamics, Ltd.: *See*—
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Ongaro, Theodore, to Ongaro Dynamics, Ltd. Vibration-free hydraulic power system. 4,221,155, Cl. 91-186.000.
Onishi, Ken; and Tanaka, Kunimaro, to Mitsubishi Denki Kabushiki Kaisha. PCM Recording and reproducing system. 4,222,079, Cl. 360-32.000.
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Opfer, James E.; Pierce, John M.; and Valby, Lawrence E., to Develco, Inc. Superconductive magnetic shield and method of making same. 4,221,834, Cl. 428-198.000.
Oppel, Werner; and Rordorf, Horst. Apparatus for the partial treatment of elongated articles by current intensive glow discharge. 4,221,972, Cl. 250-531.000.
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Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., to Imperial Chemical Industries Limited. Composite materials. 4,221,697, Cl. 260-42.530.
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Otala, Matti N. T.; and Kuokkanen, Lauri, to Insele OY. Control and measuring system for flat-individual heating/cooling and procedure for the system's calibration. 4,221,260, Cl. 165-11.00R.
Otsuka Pharmaceutical Co., Ltd.: *See—*
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Outboard Marine Corporation: *See—*
Wick, Gerald H., 4,221,202, Cl. 123-378.000.
Overman, Joseph D.; and Sheeto, Joseph J., Jr., to Du Pont de Nemours, E. I., and Company. Formation of silver halide grains in the presence of thioureas. 4,221,863, Cl. 430-567.000.
Owens, Boyd L. Lawnmower safety control system. 4,221,108, Cl. 56-11.300.
Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Dale, Ralph S., 4,221,183, Cl. 118-125.000.
Ozaki, Tadashi: *See—*
Ninagawa, Chikato; Ozaki, Tadashi; Yonekawa, Minoru; and Harada, Hitoshi, 4,221,639, Cl. 204-26.000.
Ozawa, Shoji, to Tomy Kogyo Co., Inc. Toy vehicle and trackway. 4,221,076, Cl. 46-216.000.
Pabst-Motoren KG: *See—*
Papst, Georg; Schlicker, Volker; and Wrobel, Gunter, 4,221,546, Cl. 417-354.000.
Pabst, Wilfred A.; and Crabbe, David, to Cities Service Company. Minimizing soluble iron concentration in a plant effluent. 4,221,766, Cl. 423-140.000.
Pace Incorporated: *See—*
Milne, James A., 4,221,620, Cl. 156-71.000.
Paco Corporation: *See—*
Paice, Raymond P., 4,221,319, Cl. 228-25.000.
Pahl, Robert A. Stilt construction for dwellings and the like. 4,221,090, Cl. 52-169.900.
Paice, Raymond P., to Paco Corporation. Apparatus for welding metal grating structures. 4,221,319, Cl. 228-25.000.
Pako Corporation: *See—*
Diesch, Robert E.; and Strunc, Gerald R., 4,221,144, Cl. 83-27.000.
Palm, Michael M.: *See—*
Baron, George B.; Thompson, George J.; and Palm, Michael M., 4,221,531, Cl. 414-694.000.
Palosi, Eva: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.
Panduit Corp.: *See—*
Caveney, Jack E., 4,221,352, Cl. 248-74.0PB.
Papst, Georg; Schlicker, Volker; and Wrobel, Gunter, to Pabst-Motoren KG. Axial fan. 4,221,546, Cl. 417-354.000.
Paraho Corporation: *See—*
Jones, John B., Jr., 4,221,638, Cl. 202-121.000.
Parkinson, Ward D., to Motorola, Inc. Static I^2L ram. 4,221,977, Cl. 307-238.000.
Parramore, Thomas S., to National Research Development Corporation. Hand-grip cutting tools. 4,221,048, Cl. 30-135.000.
Parry, John M.; and Raccah, Paul, to United States of America, Interior. Method of manufacturing a gas sensor. 4,221,827, Cl. 427-125.000.
Pasco, Wayne D.; and Klug, Frederic J., to General Electric Company. Method for making porous, crushable core having a porous integral outer barrier layer having a density gradient therein. 4,221,748, Cl. 264-43.000.
Pasco, Wayne D.: *See—*
Greskovich, Charles D.; Klug, Frederic J.; and Pasco, Wayne D., 4,221,594, Cl. 106-40.00R.
Patak, Richard J.: *See—*
Ledniczki, Ferenc; Patak, Richard J.; and Wayne, Ronald G., 4,221,975, Cl. 307-116.000.
Patrick, James F., to University of Melbourne, The. Connectors and articles having connectors thereon. 4,221,444, Cl. 339-17.00M.
Patterson, Bradley C., to PRE Corporation Mfg. Co. Low lift, elevatable high floor drilling mast and substructure arrangement therefor. 4,221,088, Cl. 52-116.000.
Pautrat, Jean-Claude, to J. B. Nicolas France S.A. Highway trailer of selectively variable width. 4,221,398, Cl. 280-444.000.
Pauw, Hermanus: *See—*
Bullens, Valere G. J.; Pauw, Hermanus; and Falkenburg, Rudy A., 4,221,761, Cl. 422-54.000.
Pavlovsky, Rudolf, to George Fischer Limited. Apparatus for trimming workpieces. 4,221,514, Cl. 409-291.000.
Pawlowski, Elaine D.: *See—*
Mueller, Paul A.; Hartz, John R.; Pawlowski, Elaine D.; and Freedman, M. David, 4,221,974, Cl. 250-563.000.
Payne, James A.: *See—*
Eslinger, Haynes L.; and Payne, James A., 4,221,624, Cl. 156-243.000.
Pearson, Michael B.; Meyer, Sharon A.; and Shell, Francis J., to Phillips Petroleum Company. Process for mounting palynological specimens. 4,221,823, Cl. 427-4.000.
Pechard, Lucien L.: *See—*
Logerot, Bernard A.; Pechard, Lucien L.; and Bouley, Jean-Claude A., 4,221,448, Cl. 339-75.0MP.
Pedinoff, Melvin E.; Stafsudd, Oscar M.; and Braunstein, Morris, to Hughes Aircraft Company. Hybrid Brewster's angle wire grid infrared polarizer. 4,221,464, Cl. 350-152.000.
Pegram, Philip H.: *See—*
Harvey, Samuel E.; and Pegram, Philip H., 4,221,231, Cl. 137-72.000.
Penn, Silas. Bumper guard luggage carrier. 4,221,311, Cl. 224-42.080.
Pennbrook Corporation: *See—*
Bals, Edward J., 4,221,332, Cl. 239-223.000.
Pennebaker, William B.; and Hoekstra, Jan P. Motor-assist vehicle. 4,221,275, Cl. 180-206.000.
Penneck, Richard J.: *See—*
Allen, Leslie J.; Hall, Robert L.; and Penneck, Richard J., 4,221,457, Cl. 339-275.00R.
Pennwalt Corporation: *See—*
Ciavattoni, Anthony; Flynn, John J.; and Weber, Theodore, Jr., 4,221,970, Cl. 250-439.00P.
Raghunathan, Yegnaswami, 4,221,778, Cl. 424-31.000.
Pepsico, Inc.: *See—*
Cooper, Adrianus A. G.; and Leopold, Phillip M., 4,221,382, Cl. 273-73.00F.
Perkin-Elmer Limited: *See—*
Mould, Henry M., 4,221,484, Cl. 356-319.000.
Perrey, Klaus: *See—*
Weber, Rolf-Ortwin; Perrey, Klaus; and von Rechenberg, Wolfrad, 4,221,793, Cl. 424-250.000.
Perrier, James M., Sr.: *See—*
Phillips, Robert E., Jr., 4,221,576, Cl. 55-352.000.
Perrut, Michel: *See—*
Ronc, Michel; Perrut, Michel; and Valentin, Patrick, 4,221,259, Cl. 165-1.000.
Person, Abraham; and Wetmore, Sherman B., to Global Marine, Inc. Stabilization of subsea riser pipes having free lower ends. 4,221,504, Cl. 405-303.000.
Peshes, Ori: *See—*
Behar, Meir; Peshes, Ori; and Liebersohn, Aharon, 4,221,893, Cl. 525-438.000.
Peters, Mark A.: *See—*
Meyer, Gustavo A.; Peters, Mark A.; and Leaver, Helen S., 4,221,765, Cl. 423-24.000.
Peterson, Loren N., to Salina Vortex Conveyor Corporation. Method and apparatus for material handling. 4,221,307, Cl. 222-428.000.
Peterson, Richard J., to C & C Metal Products Corporation. Apparatus for assembling covered buttons. 4,221,139, Cl. 79-1.000.
Peth, Horst: *See—*
Hess, Heinz; and Peth, Horst, 4,222,106, Cl. 364-521.000.
Petrelewicz, Edward F.; and Keglewitsch, Josef, to Bunker Ramo Corporation. Electrical test adapter plug. 4,221,451, Cl. 339-105.000.
Petrolite Corporation: *See—*
Martin, Robert B., 4,221,648, Cl. 204-186.000.
Pews, R. Garth; and Ash, Mezzie L., to Dow Chemical Company, The. Preparation of 2-(Chloromethyl)pyridine. 4,221,913, Cl. 546-346.000.
Peyton, John J., to Industrial Automation Corporation. Electronic bottle inspector having particle and liquid detection capabilities. 4,221,961, Cl. 250-223.00B.
Pfaff, Werner: *See—*
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Pfaff, Werner, 4,221,815, Cl. 424-319.000.
Pfeiffer, Heinrich, to Schering Aktiengesellschaft. Process for the preparation of serinol (1,3-dihydroxy-2-aminopropane). 4,221,740, Cl. 260-584.00R.
Pfleger, Frederick W. Disposable hypodermic syringe. 4,221,218, Cl. 128-218.00D.

Philip Morris Incorporated: *See—*
Thatcher, Richard E., 4,221,035, Cl. 209-44.100.

Philippe, Paulus; Vincent, Leroy; and Graas, Henri, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Surface treatment of metal strip. 4,221,832, Cl. 427-319.000.

Phillipp, Robert G.; Hellman, Wayne R.; Matz, Wayne C.; and Bacharowski, Walter, Jr., to General Electric Company. Discharge lamp having mechanical disconnect guard against jacket failure. 4,221,993, Cl. 315-73.000.

Phillips, John F.: *See—*
Swisher, George W., Jr.; and Phillips, John F., 4,221,434, Cl. 299-39.000.

Phillips Petroleum Company: *See—*
Hughes, James K.; and Erickson, Wayne K., 4,221,838, Cl. 428-369.000.
Pearson, Michael B.; Meyer, Sharon A.; and Shell, Francis J., 4,221,823, Cl. 427-4.000.
Stapp, Paul R., 4,221,916, Cl. 560-243.000.
Stapp, Paul R., 4,221,917, Cl. 560-246.000.

Phillips, Robert E., Jr., to Perrier, James M., Sr., a part interest. Automatic air filter changer. 4,221,576, Cl. 55-352.000.

Phillips, Wendell G.: *See—*
Gaertner, Van R.; and Phillips, Wendell G., 4,221,583, Cl. 71-86.000.

Picozzi, James R.: *See—*
Faust, Matthew J.; and Picozzi, James R., 4,221,851, Cl. 429-197.000.

Pierburg GmbH & Co., KG: *See—*
Meyer, Otto, 4,221,204, Cl. 123-568.000.

Pierce, John M.: *See—*
Opfer, James E.; Pierce, John M.; and Valby, Lawrence E., 4,221,834, Cl. 428-198.000.

Pietsch, Hanns; Schulte, Dietrich; Sachau, Gunther; and Quandt, Jurgen C., to Biersdorf Aktiengesellschaft. Supporting bandage. 4,221,214, Cl. 128-90.000.

Pilgrim Technical Products Ltd.: *See—*
Brunskole, Joseph H., 4,221,365, Cl. 254-398.000.

Pilkington Brothers Limited: *See—*
Wright, Donald C.; Marsh, Brian; and Young, Rodney L. D., 4,221,579, Cl. 65-114.000.

Pinckaers, B. Hubert; and Haglund, Stephen A., to Honeywell Inc. Abnormal condition responsive means with periodic high sensitivity. 4,222,046, Cl. 340-629.000.

Pioneer Electronic Corporation: *See—*
Fushimi, Akihiro, 4,221,963, Cl. 250-231.0SE.
Tsukagoshi, Tsunehiro; Toma, Teruo; Yokozeki, Shinichi; and Yoshino, Toshikazu, 4,221,773, Cl. 423-445.000.

Piontkowski, Carl F.; Brugger, Robert E.; Bartley, Richard H.; and Waldron, Ernest J., Jr., to C & D Distributors, Inc. Log lifting apparatus. 4,221,416, Cl. 294-17.000.

Piper, George F.; Vesperman, William C.; and Wilson, Max K., to Western Electric Company, Incorporated. Methods of enclosing a plurality of conductors in a partitioned jacket. 4,221,756, Cl. 264-174.000.

Pissiotas, Georg: *See—*
Rohr, Otto; Pissiotas, Georg; and Boner, Beat, 4,221,581, Cl. 71-70.000.

Pitchford, Richard L., to Singer Company, The. Image expander for rear-screen projectors. 4,221,473, Cl. 353-76.000.

Pitney Bowes Inc.: *See—*
Morrison, Douglas I.; and Gergely, William, Jr., 4,221,375, Cl. 271-127.000.
Schubert, Keith E., 4,221,135, Cl. 74-29.000.

Plapper, Juergen; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Water-insoluble alkali metal aluminosilicates and polycarboxylic acids in the tanning process for the production of leather. 4,221,564, Cl. 8-94.170.

Platt Saco Lowell Limited: *See—*
Smith, Alan, 4,221,110, Cl. 57-263.000.

Plattner, Jacob J.: *See—*
Ali, Akhtar; and Plattner, Jacob J., 4,221,706, Cl. 260-112.50R.

Pleass, Charles M., to University of Delaware. Fluid pump. 4,221,550, Cl. 417-437.000.

Pliotron Corporation of Canada Limited: *See—*
Van Santen, Gordon L., 4,221,362, Cl. 254-98.000.

Plunkett, Luther C., Jr.: *See—*
Mohammadioun, Said; Wittler, David A.; Titus, Theodore, IV; and Plunkett, Luther C., Jr., 4,221,938, Cl. 179-100.1DR.

Pociluyko, Alex, to Scott Paper Company. Bleed-fast cationic dyestuffs. 4,221,562, Cl. 8-506.000.

Pogorelsky, Oleg N.: *See—*
Volodko, Leonid V.; Ksenofontov, Mikhail A.; Ostrovskaya, Ljudmila E.; Dzivitskaya, Galina G.; Goretsky, Igor D.; Khoruzhy, Vasily M.; Denisjuk, Nikolai M.; Volokh, Anatoly Y.; and Pogorelsky, Oleg N., 4,221,873, Cl. 521-103.000.

Pollard, Edward E.: *See—*
Engle, Vencil D.; Marowski, Raymond M.; Pollard, Edward E.; and Pullen, John L., 4,221,489, Cl. 400-636.300.

Polysius Ag: *See—*
Balzau, Gerhard; Kompa, Gunter; Steinmann, Manfred; and Bode, Klaus, 4,221,509, Cl. 406-91.000.

Ponzo, Frankieboy. Automatic kill switch. 4,221,278, Cl. 180-283.000.

Pool, James L., to Lisle Corporation. Valve seat forming tool. 4,221,512, Cl. 408-83.500.

Poole, Michael J., to United Kingdom Atomic Energy Authority. Ultrasonic nondestructive testing apparatus. 4,221,132, Cl. 73-620.000.

Pop, Ioan: *See—*
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.

Powell, Ian L.: *See—*
Watson, Barry K.; and Powell, Ian L., 4,222,018, Cl. 333-251.000.

Powell, Lloyd J., to International Telephone and Telegraph Corporation. Electrical connector. 4,221,447, Cl. 339-64.00M.

Powell, Waylon C.: *See—*
Barger, John J.; Powell, Waylon C.; and Underwood, James R., 4,221,957, Cl. 219-73.200.

Powers, John T. Method and apparatus for selectively adjusting the stiffness of a ski. 4,221,400, Cl. 280-602.000.

PPG Industries, Inc.: *See—*
Erikson, J. Alden; Lewarchik, Ronald J.; and Birkmeyer, William J., 4,221,891, Cl. 525-514.000.
Frank, Robert G., 4,221,580, Cl. 65-273.000.
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,221,885, Cl. 525-328.000.
Walser, Douglas M., 4,221,602, Cl. 106-211.000.

Pratt, Leslie J. Rock picker. 4,221,265, Cl. 171-126.000.

Prazak, Paul R.: *See—*
Mrozowski, Andrij; Naylor, Jimmy R.; and Prazak, Paul R., 4,222,107, Cl. 364-571.000.

PRE Corporation Mfg. Co.: *See—*
Patterson, Bradley C., 4,221,088, Cl. 52-116.000.

Precision Dynamics Corporation: *See—*
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,221,063, Cl. 40-21.00C.

Preun, Hugo: *See—*
Zirps, Wilhelm; and Preun, Hugo, 4,221,156, Cl. 91-407.000.

Primary Children's Medical Center: *See—*
Clark, Justin S., 4,221,224, Cl. 128-718.000.

Prince Corporation: *See—*
Kempkers, Gordon B., 4,221,354, Cl. 248-293.000.

Prochnow, Claus; and Adamski, Gunter, to Rollei-Werke Franke & Heidecke GmbH & Co. Kg. Camera. 4,221,477, Cl. 354-82.000.

Procter & Gamble Company, The: *See—*
Wahl, Kent R.; and Harm, A. Robert, 4,221,304, Cl. 221-1.000.

Procyk, Frank J.: *See—*
Clemons, Donald G.; and Procyk, Frank J., 4,222,112, Cl. 365-189.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Commeyras, Auguste; Blancou, Hubert; and Lantz, Andre, 4,221,734, Cl. 260-408.000.
Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge Y.; and Daude-Lagrave, Marie-Christine, 4,221,675, Cl. 252-186.000.
Strassel, Albert, 4,221,757, Cl. 264-171.000.

Pruitt, James G.: *See—*
Rolleigh, Richard L.; Pruitt, James G.; and Stokes, Robert H., 4,222,114, Cl. 367-153.000.

Pullen, John L.: *See—*
Engle, Vencil D.; Marowski, Raymond M.; Pollard, Edward E.; and Pullen, John L., 4,221,489, Cl. 400-636.300.

Pullman Incorporated: *See—*
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Purdue Research Foundation: *See—*
Cooper, George R.; and Nettleton, Raymond W., 4,222,115, Cl. 375-1.000.

Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, to Centrala Industriala de Medicamente Cosmetice Coloranti si Lacuri. Composition and method for the treatment of duodenal ulcers, gastritis and gastro-duodenitis. 4,221,783, Cl. 424-127.000.

Pusch, Gunter. Method and apparatus for scanning and for electronic processing of thermal pictures. 4,222,065, Cl. 358-113.000.

Puthon, Joseph: *See—*
Guillermin, Rene; Joly, Jean; and Puthon, Joseph, 4,221,833, Cl. 428-92.000.

Quadro, Giuseppe. Method of inducing platelet antiaggregation activity. 4,221,805, Cl. 424-274.000.

Quality Industries: *See—*
Wagoner, James E., 4,221,052, Cl. 33-25.00B.

Quality Mills, Inc.: *See—*
Besore, Calvin H.; and Wampler, Charles J., deceased, 4,221,176, Cl. 112-121.120.

Quandt, Jurgen C.: *See—*
Pietsch, Hanns; Schulte, Dietrich; Sachau, Gunther; and Quandt, Jurgen C., 4,221,214, Cl. 128-90.000.

Quast, Joseph G.: *See—*
Nord, Keith W.; Quast, Joseph G.; Williams, William H.; Willmore, Naaman W.; and Benson, Ronald B., 4,221,519, Cl. 414-49.000.

Queen's University of Belfast, The: *See—*
Wells, Alan A., 4,221,538, Cl. 415-2.000.

Quemner, Jean M.: *See—*
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,221,699, Cl. 260-45.70S.

Querry, Merle V.; and Cano, Francis R., to American Cyanamid Company. Stabilization of pneumococcal polysaccharides. 4,221,906, Cl. 536-1.000.

Quinn, Russell C., to Jos. Dyson and Sons, Inc. Latch for lift truck fork. 4,221,535, Cl. 414-785.000.

Qureshi, Nawaz M., to ESB United States, Inc.; and ESB International Corp. Radial grids for lead acid batteries. 4,221,852, Cl. 429-211.000.

Raccah, Paul: *See—*
Parry, John M.; and Raccah, Paul, 4,221,827, Cl. 427-125.000.

Raccanelli, Mirco; and Romano, Carlo, to Ing. C. Olivetti & C., S.p.A. Magnetic disk apparatus with automatic fast head advance. 4,222,082, Cl. 360-75.000.

Raccanelli, Mirco: *See—*
Tronzano, Sergio; Raccanelli, Mirco; and Romano, Carlo, 4,222,083, Cl. 360-92.000.

Rae, George, to Rexnord Inc. Conveyor roller. 4,221,288, Cl. 198-781.000.

Raghunathan, Yegnaswami, to Pennwalt Corporation. Prolonged release pharmaceutical preparations. 4,221,778, Cl. 424-31.000.

Ramey, Bobbie J., deceased: *See—*
Cuscurida, Michael; Zimmerman, Robert L.; and Ramey, Bobbie J., deceased, 4,221,877, Cl. 521-160.000.

Ramey, Sara N., executrix: *See—*
Cuscurida, Michael; Zimmerman, Robert L.; and Ramey, Bobbie J., deceased, 4,221,877, Cl. 521-160.000.

Ramos Martos, Juan: *See—*
Aranda Lopez, Jose M.; Conde Hinojosa, Jose R.; and Ramos Martos, Juan, 4,221,297, Cl. 209-576.000.

Rando, Joseph F., to Spectra-Physics, Inc. Laser beam level instrument. 4,221,483, Cl. 356-250.000.

Raney, Frank R.: *See—*
Stefan, Larry S.; Dearing, Clarence A., Jr.; and Raney, Frank R., 4,221,511, Cl. 407-117.000.

Ranson, Andre: *See—*
Guerder, Pierre; and Ranson, Andre, 4,221,825, Cl. 427-34.000.

Rasberger, Michael; and Rody, Jean, to Ciba-Geigy Corporation. Stabilized synthetic polymers. 4,221,701, Cl. 260-45.80N.

Ravagnan, Giancarlo. System for separating and removing oil based matter from liquids such as water. 4,221,669, Cl. 210-104.000.

Raver, Louis J.; and Bricker, Gene D., to General Motors Corporation. Liquid cooled rectified-alternating current generator. 4,221,982, Cl. 310-59.000.

Ray, Ranjan, to Allied Chemical Corporation. Method for making metallic glass powder. 4,221,587, Cl. 75-0.50C.

Ray, Ranjan, to Allied Chemical Corporation. Glassy alloys which include iron group elements and boron. 4,221,592, Cl. 75-122.000.

Raychem Limited: *See—*
Allen, Leslie J.; Hall, Robert L.; and Penneck, Richard J., 4,221,457, Cl. 339-275.00R.

Raytheon Company: *See—*
Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., 4,221,463, Cl. 350-150.000.
Capps, Charles P., 4,222,054, Cl. 343-754.000.

RCA Corporation: *See—*
Ahmed, Adel A. A., 4,221,979, Cl. 307-255.000.
Bell, Alan E.; and Bartolini, Robert A., 4,222,071, Cl. 358-128.500.
Breithaupt, David W., 4,222,074, Cl. 358-149.000.
Foldes, Peter, 4,222,017, Cl. 333-122.000.
Hannan, William J.; and Woll, Harry J., 4,221,465, Cl. 350-162.0SF.
Lusch, Johann, 4,222,120, Cl. 455-154.000.
Mezrich, Reuben S., 4,222,008, Cl. 328-28.000.
Okuno, Yoshihiro, 4,221,930, Cl. 179-1.0GB.
Schiff, Leonard N., 4,221,934, Cl. 370-7.000.

Read, Anthony M. War game apparatus. 4,221,389, Cl. 273-262.000.

Reale, Salvatore, to Sunergy Corporation. Insulated conduit. 4,221,239, Cl. 138-149.000.

Recordati, S.A.: *See—*
Nardi, Dante; Massarani, Elena; Tajana, Alberto; and Veronese, Mario, 4,221,803, Cl. 424-273.00R.

Redmon, John T.: *See—*
Cousino, Bernard A.; Cousino, Walter E.; and Redmon, John T., 4,221,032, Cl. 29-2.000.

Redwine, Michael A., to Century Mfg. Co. Obstetric chair. 4,221,370, Cl. 269-323.000.

Redwine, Terry W.: *See—*
Harris, Alexander T.; Kelly, Thomas J.; and Redwine, Terry W., 4,221,659, Cl. 210-639.000.

Reeves Brothers, Inc.: *See—*
Boon, Derk J., 4,221,555, Cl. 425-89.000.

Regie Nationale des Usines Renault: *See—*
Castarede, Armand, 4,221,196, Cl. 123-41.840.

Reichel, Richard C.: *See—*
Lazar, Remus I.; and Reichel, Richard C., 4,221,563, Cl. 8-582.000.
Lazar, Remus I.; and Reichel, Richard C., 4,221,566, Cl. 8-582.000.

Reinisch, Wolfgang: *See—*
Melloh, Wilhelm; and Reinisch, Wolfgang, 4,221,733, Cl. 260-404.500.

Remington, Richard C. Electrical connector. 4,221,452, Cl. 339-143.00S.

Renal Systems, Inc.: *See—*
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,221,543, Cl. 417-22.000.

Research-Cottrell, Inc.: *See—*
Hankins, Frederick E., 4,221,573, Cl. 55-112.000.

Research Dynamics, Inc.: *See—*
Anno, James N.; and Boeing, Howard H., 4,221,775, Cl. 423-641.000.

Rethy, Alexander, to Kraftwerk Union Aktiengesellschaft. Device for feeding tubes for heat exchangers. 4,221,534, Cl. 414-745.000.

Retzloff, Russell C.: *See—*
Bobel, Robert J., II; Blausey, Richard H., Jr.; Floyd, Edward D.; Hopings, Donald B.; Retzloff, Russell C.; and Rudolph, Andrew W., 4,221,053, Cl. 33-174.00L.

Reu, Donald G. Treatment for commercial vegetable protein products. 4,221,707, Cl. 260-123.500.

Rexnord Inc.: *See—*
Rae, George, 4,221,288, Cl. 198-781.000.

Rhen Beteiligungs-und Finanzierungs-AG: *See—*
Brunner-Schwer, Hermann, 4,222,119, Cl. 455-140.000.

"RHEWUM" Rheinische Werkzeug- und Maschinenfabrik GmbH: *See—*
Althoff, Klaus, 4,221,306, Cl. 222-200.000.

Rhoades, Don. Solar heated anaerobic digestor. 4,221,571, Cl. 48-111.000.

Rhone-Poulenc Industries: *See—*
Arnaud, Michel; and Roussel, Christian, 4,221,722, Cl. 260-345.100.
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Rice, Hal H., to General Motors Corporation. Method for low pressure forming of fused silica compositions and resultant bodies. 4,221,596, Cl. 106-69.000.

Richard, Gerard Y., to Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C. Carrousel with a horizontal, fixed circuit, comprising several solidary arms on a rotating drum with a vertical axis. 4,221,258, Cl. 164-181.000.

Richards, Lawrence I., to Advance Lifts, Incorporated. Bi-elevational platform lift. 4,221,280, Cl. 187-18.000.

Richardson-Merrell Inc.: *See—*
Grisar, J. Martin, 4,221,808, Cl. 424-278.000.

Richardson, William A.: *See—*
Barsack, Edward; Chabot, Arthur A.; Harris, Clarke E.; Kawachi, Donald A.; and Richardson, William A., 4,221,463, Cl. 350-150.000.

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Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.

Ricoh Company, Ltd.: *See—*
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Riecke, Kurt; and Land, Ferdinand, to Feldmuhle Aktiengesellschaft. Coating composition for acceptor sheets in carbonless copying. 4,221,690, Cl. 260-29.70R.

Riguez Associates, a Limited Partnership: *See—*
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Riley, Keith; Riley, Kenneth A.; and Stoney, Gerrard J., to Riley, Keith; and Riley, Kenneth Alan. Gripping devices. 4,221,419, Cl. 294-106.000.

Riley, Kenneth A.: *See—*
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Ritter, Gerhard; Ritter, Klaus; Gott, Hans; and Ritter, Josef, to Fa. EVG Entwicklungs-u. Verwertungs-Gesellschaft mbH. Method of cutting gratings to length. 4,221,143, Cl. 83-37.000.

Ritter, Hans-Joachim: *See—*
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Ritter, Klaus: *See—*
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Rix, Wesley J. Nail holder. 4,221,248, Cl. 145-46.000.

Rizzone, Michael L.; and Secrist, Walter S., to United States Steel Corporation. Inertia bar for sucker rods. 4,221,549, Cl. 417-437.000.

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Robert Bosch GmbH: *See—*
Attinger, Manfred; Niemann, Gert; Makkens, Lothar; Eisenacher, Werner; and Fraubose, Fritz, 4,221,850, Cl. 429-160.000.
Bock, Gert, 4,222,078, Cl. 360-9.000.
Friese, Karl-Hermann; Esper, Friedrich J.; and Geier, Heinz, 4,221,650, Cl. 204-195.00S.
Hess, Heinz; and Peth, Horst, 4,222,106, Cl. 364-521.000.
Kofink, Wolfgang, 4,222,001, Cl. 322-60.000.
Zirps, Wilhelm; and Preun, Hugo, 4,221,156, Cl. 91-407.000.

Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., to Goodyear Tire & Rubber Company, The. Tread for pneumatic tire. 4,221,254, Cl. 152-209.00D.

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Harper, Douglas C.; Robinson, Norman; and Janikowski, Stanislaw M., 4,221,769, Cl. 423-320.000.

Robson, Robert; Swinney, Brian; and Tack, Robert D., to Exxon Research & Engineering Co. Metal phenates. 4,221,673, Cl. 252-42.700.

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Rockwell International Corporation: *See—*
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Godejahn, Gordon C., Jr., 4,221,045, Cl. 29-571.000.
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Rodgers, Thurman J., to American Microsystems. VMOS Floating gate memory with breakdown voltage lowering region. 4,222,063, Cl. 357-45.000.

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Rodriguez, Ludovic; and Marchal, Lucien, to UCB, Societe Anonyme. Lactam-N-acetic acids and their amides. 4,221,789, Cl. 424-244.000.

Rodriguez, Ricardo A. Controlled thrust oscillating sprinkler. 4,221,333, Cl. 239-255.000.

Rody, Jean: *See—*
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Roemer, Leonhard J., Jr. Fish line holder. 4,221,068, Cl. 43-43.120.

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Rogowsky, York, to Licentia Patent-Verwaltungs-G.m.b.H. Control of high-voltage D.C. transmission systems. 4,222,097, Cl. 363-51.000.

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Meitzner, Erich F.; and Oline, James A., 4,221,871, Cl. 521-29.000.

Rohr, James D.: *See—*
VanRemortel, Jack D.; and Rohr, James D., 4,221,432, Cl. 298-1.0SG.

Rohr, Otto; Pissiotas, Georg; and Boner, Beat, to Ciba-Geigy Corporation. Phenoxyphenoxyalkanecarboxylic acid esters. 4,221,581, Cl. 71-70.000.

Rollei-Werke Franke & Heidecke GmbH & Co. Kg: *See—*
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Rolleigh, Richard L.; Pruitt, James G.; and Stokes, Robert H., to United States of America, Navy. Cylindrical array radiator. 4,222,114, Cl. 367-153.000.

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Ronc, Michel; Perrut, Michel; and Valentin, Patrick, to Elf Union. Process for storing calories. 4,221,259, Cl. 165-1.000.

Rordorf, Horst: *See—*
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Rose, Charles F. Novelty chair. 4,221,431, Cl. 297-445.000.

Rosenberg, Arnold M.; and Gaidis, James M., to W. R. Grace & Co. Applicator for laying rolled sheet material. 4,221,628, Cl. 156-577.000.

Rosenberg, Peretz. Steppable mechanism and valves including same. 4,221,236, Cl. 137-624.110.

Rosenkranz, Hans J.: *See—*
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Ross, Edward E., to Del Monte Corporation. Fruit processing apparatus and method. 4,221,104, Cl. 53-435.000.

Rost, Harry, to Metzeler Kautschuk AG. Device for connecting together steel cord inserts for vehicle tires. 4,221,627, Cl. 156-507.000.

Roth, Norman J., to General Motors Corporation. Sensor. 4,221,940, Cl. 200-61.45R.

Roth, Robert H.: *See—*
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Rothbuhr, Lothar: *See—*
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Rovnyak, George C. Mercaptoacyldihydropyrazole carboxylic acid derivatives. 4,221,804, Cl. 424-273.00P.

Rowe, Eugene H., to B. F. Goodrich Company, The. Divinyl polyester molding compositions. 4,221,889, Cl. 525-404.000.

Rubbermaid Incorporated: *See—*
Taylor, William D., 4,221,299, Cl. 211-41.000.

Rudak, Gennady I.; Berkhin, Iosif M.; Kravchenko, Gennady V.; Dmitrieva, Kamilla S.; Bocharov, Vladimir I.; Kuzmenko, Julian V.; Kharkovsky, Alexandr S.; Kononov, Igor V.; Felenkovsky, Igor V.; Velikoselsky, Nikolai D.; and Gudze, Arnold A. Load-lifting crane. 4,221,300, Cl. 212-192.000.

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Rudy, Thomas P.; and West, Jack K., to United Technologies Corporation. Surfactant additives for solid propellants. 4,221,617, Cl. 149-19.500.

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Roberts, Charles W.; Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; Ruip, Terrence M.; and Fetty, Harold D., 4,221,254, Cl. 152-209.00D.

Runyon, Robert S. Overcurrent control device with fail-safe circuits. 4,222,086, Cl. 361-93.000.

Rupert, Clement L. Sliding valve pump. 4,221,551, Cl. 417-511.000.

Rusch, Arthur, to Weber AG, Fabrik Elektrotechnischer Artikel und Apparate. Circuit breaker with manual release. 4,222,019, Cl. 335-6.000.

Ruscheinsky, Emil: *See—*
Plapper, Juergen; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,221,564, Cl. 8-94.170.

Rutledge, Raleigh N.; and Cruson, Bob J., to Cosden Technology, Inc.,. Coextruded plastic sheeting. 4,221,836, Cl. 428-220.000.

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Saito, Ichiyoshi: *See—*
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Saito, Koichi: *See—*
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Sakaguchi, Zen: *See—*
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Sakata Shokai Ltd.: *See—*
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Sakiyama, Kazuo; Ota, Hiroshi; and Kato, Hirosi, to Sumitomo Chemical Company, Limited; and Sakata Shokai Ltd. Ultraviolet radiation curable printing ink. 4,221,686, Cl. 260-23.0EP.

Sala, Gianfranco: *See—*
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Salina Vortex Conveyor Corporation: *See—*
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Sanford, Carl C., Jr., to Miller, Victoria. Convertible furniture. 4,221,173, Cl. 108-113.000.

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Terauchi, Kiyoshi, 4,221,545, Cl. 417-269.000.
Sanshin Electric Co., Ltd.: *See*—
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Santisi, Harry C., to Selas Corporation of America. Burner for use with oil or gas. 4,221,558, Cl. 431-183.000.
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Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Asamoto, Tetsuhiro; and Uebayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Electric discharge machining method. 4,221,952, Cl. 219-69.00G.
Sato, Susumu; and Hamada, Koji, to Tamura Electric Works, Ltd. Miniature counter having zero reset push buttons. 4,221,327, Cl. 235-144.0HC.
Sato, Tsutomu; and Isayama, Takuro, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,222,060, Cl. 346-140.00R.
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Saxon, Arthur F., to Dravo Corporation. Horizontal extractor. 4,221,764, Cl. 422-268.000.
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Schaap, David J.; and Watrous, Donald L., to General Electric Company. Cooking cycle timer. 4,222,037, Cl. 340-309.100.
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Schippers, Heinz; Bauer, Karl; Lenk, Erich; and Dammann, Peter, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Rotary filament feeder. 4,221,345, Cl. 242-47.000.
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Schlereth, Fritz H.; and Lanpher, Gary E., to Inficon Leybold-Heraeus Inc. Control system for mass spectrometer. 4,221,964, Cl. 250-290.000.
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Schmidt, Manfred, to Sybron Corporation. X-ray voltage supply. 4,221,969, Cl. 250-421.000.
Schmidt, Paul. Pneumatically operated percussion boring apparatus. 4,221,157, Cl. 91-416.000.
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Schneider, Herbert R., to Eastman Kodak Company. Self-cleaning perforation detector and method. 4,221,329, Cl. 235-458.000.
Schneider, Randy G., to Western Electric Company, Incorporated. Method of manufacturing waterproof shielded cable. 4,221,926, Cl. 174-107.000.
Scholes, Addison B.; and Dollar, David L., to Ball Corporation. Apparatus for applying lubricating materials to metallic substrates. 4,221,185, Cl. 118-634.000.
Schrier, Israel, to Bausch & Lomb Incorporated. Contact lens insertion and removal device. 4,221,414, Cl. 294-1.0CA.
Schroeder, Jack J. Animal feed supplement in block form with reduced consumption rate. 4,221,818, Cl. 426-138.000.
Schubert, Keith E., to Pitney Bowes Inc. Postage meter conversion apparatus. 4,221,135, Cl. 74-29.000.
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Sebastian, James A. Device for displaying indicia. 4,221,064, Cl. 40-109.000.
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Seiberling, Theophilus K., to Seibering, Mildred Kelly; and Voke, Frances S. Radiation cure of tire elements. 4,221,253, Cl. 152-330.00R.
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Tanikawa, Takayoshi, 4,221,502, Cl. 405-126.000.
Seidl, Charles H.: *See*—
Singer, Richard M.; and Seidl, Charles H., 4,221,038, Cl. 29-160.000.
Seifert, Hans-Georg: *See*—
Simon, Joachim; Wachholder, Werner; and Seifert, Hans-Georg, 4,221,346, Cl. 242-55.010.
Seiler, Norman C., to Harris Corporation. Time division multiplied speech scrambler. 4,221,931, Cl. 179-1.50R.
Seiner, Jerome A.: *See*—
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,221,885, Cl. 525-328.000.
Seki, Tatsujiro; Fujii, Motoji; Hayashi, Motoshige; and Tsubone, Masahiro, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Process for

preparing a foamed article of thermoplastic resin and a die therefor. 4,221,621, Cl. 156-78.000.

Sekiguchi, Tetsuo: *See*—
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Nakazawa, Kenji, 4,221,687, Cl. 260-23.0XA.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Yoshimura, Yukio; and Sonku, Masahisa, 4,221,303, Cl. 220-461.000.

Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Seki, Tatsujiro; Fujii, Motoji; Hayashi, Motoshige; and Tsubone, Masahiro, 4,221,621, Cl. 156-78.000.

Selander, Stig: *See*—
Selander, Stig D.; and Cederquist, Karl N., 4,221,630, Cl. 162-13.000.

Selander, Stig D.; and Cederquist, Karl N., to Selander, Stig. Wet method of preparing fiberboard products in a substantially closed and balanced white water system. 4,221,630, Cl. 162-13.000.

Selas Corporation of America: *See*—
Santisi, Harry C., 4,221,558, Cl. 431-183.000.

Selden, Boynton, to Cushman Industries, Incorporated. Fluid operating mechanism for a rotary chuck. 4,221,160, Cl. 91-471.000.

Selman, Gordon L.: *See*—
Iles, Gerald S.; and Selman, Gordon L., 4,222,025, Cl. 338-25.000.

Senoh Kabushiki Kaisha: *See*—
Shimizu, Motoi; Miyazaki, Masaaki; and Oh-Higashi, Seiji, 4,221,996, Cl. 318-287.000.

Sentle, Jesse W., Jr.; and Kish, Gerald J., to Sentle Trucking Company. Convertible trailer body construction. 4,221,427, Cl. 296-181.000.

Sentle Trucking Company: *See*—
Sentle, Jesse W., Jr.; and Kish, Gerald J., 4,221,427, Cl. 296-181.000.

Sentralinstitutt for Industriell Forskning: *See*—
Finden, Per O., 4,221,273, Cl. 180-6.480.

Seragnoli, Enzo, to G.D. Societa per Azioni. Device for forming and transferring batches of products in automatic wrapping machines. 4,221,287, Cl. 198-418.000.

Sessler, Eva-Maria. Checking device for checking the food intake. 4,221,959, Cl. 235-92.0AC.

Settle, Carl L. Clued letter set. 4,221,061, Cl. 35-35.00R.

Severus-Laubenfeld, Harald, to Swiss Aluminium Ltd. Composite panels which are not easily combustible. 4,221,835, Cl. 428-215.000.

Shames, Harold: *See*—
Shames, Sidney J.; and Shames, Harold, 4,221,335, Cl. 239-428.500.
Shames, Sidney J.; and Shames, Harold, 4,221,337, Cl. 239-428.500.
Shames, Sidney J.; and Shames, Harold, 4,221,338, Cl. 239-428.500.

Shames, Sidney J.; and Shames, Harold. Flow controller and support therefor, and flow controller-noise reducer combinations. 4,221,335, Cl. 239-428.500.

Shames, Sidney J.; and Shames, Harold. Aerator and spray combination. 4,221,337, Cl. 239-428.500.

Shames, Sidney J.; and Shames, Harold. Combination spray and aerator. 4,221,338, Cl. 239-428.500.

Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; and Zvenigorodsky, Evgeny I. Pneumatic conveying apparatus for reloading bulk materials. 4,221,506, Cl. 406-30.000.

Sharp Kabushiki Kaisha: *See*—
Minakawa, Hiroshi, 4,221,949, Cl. 219-10.55C.
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,221,179, Cl. 112-158.00E.

Shaw, John E. A.: *See*—
Tye, Frank L.; Shaw, John E. A.; and Agopsowicz, Andrzej K., 4,221,853, Cl. 429-224.000.

Sheeto, Joseph J., Jr.: *See*—
Overman, Joseph D.; and Sheeto, Joseph J., Jr., 4,221,863, Cl. 430-567.000.

Sheftelevich, Julia L.: *See*—
Shmidel, Evgeny B.; Berezkin, Viktor G.; Kolomiets, Ljudmila N.; Sheftelevich, Julia L.; and Shepelev, Valery E., 4,221,668, Cl. 210-635.000.

Shell, Francis J.: *See*—
Pearson, Michael B.; Meyer, Sharon A.; and Shell, Francis J., 4,221,823, Cl. 427-4.000.

Shells, Inc.: *See*—
Bray, James W., 4,221,752, Cl. 264-121.000.

Shepelev, Valery E.: *See*—
Shmidel, Evgeny B.; Berezkin, Viktor G.; Kolomiets, Ljudmila N.; Sheftelevich, Julia L.; and Shepelev, Valery E., 4,221,668, Cl. 210-635.000.

Shiba, Keisuke; and Kobayashi, Kesanao, to Fuji Photo Film Co., Ltd. Process for preparing a planographic printing plate. 4,221,858, Cl. 430-266.000.

Shibata, Kizo; Ootsuka, Ichiro; Anada, Shyoichi; and Wakasugi, Kunio, to Hokusei Aluminum Company Ltd. Method of treating a surface of an aluminum or aluminum alloy. 4,221,640, Cl. 204-33.000.

Shimizu, Katsuichi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Recording apparatus including analog-digital converter. 4,222,105, Cl. 364-518.000.

Shimizu, Kenichi: *See*—
Tamura, Gakuzo; and Shimizu, Kenichi, 4,221,908, Cl. 542-426.000.

Shimizu, Masami: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Kozuki, Susumu; Date, Nobuaki; Shimizu, Masami; and Takishima, Yoshiyuki, 4,221,476, Cl. 354-38.000.

Shimizu, Motoi; Miyazaki, Masaaki; and Oh-Higashi, Seiji, to Senoh Kabushiki Kaisha. Hoisting apparatus. 4,221,996, Cl. 318-287.000.

Shimizu, Shigehisa; and Mizutani, Shigemitsu, to Fuji Photo Film Co., Ltd. Running web cutting machine. 4,221,145, Cl. 83-71.000.

Shimizu, Tohru; Haji, Hideki; and Mochizuki, Fujiaki, to Kurita Water Industries Ltd. Method of dehydrating organic sludge. 4,221,661, Cl. 210-721.000.

Shindo, Minoru: *See*—
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.

Shine, Carl, to Fischer & Porter Company. Soft-magnetic platinum-cobalt products. 4,221,615, Cl. 148-120.000.

Shintani, Taigan: *See*—
Saito, Seiji; and Shintani, Taigan, 4,221,958, Cl. 235-92.00T.

Shmidel, Evgeny B.; Berezkin, Viktor G.; Kolomiets, Ljudmila N.; Sheftelevich, Julia L.; and Shepelev, Valery E. Method, apparatus and system for producing eluent flow in liquid chromatography. 4,221,668, Cl. 210-635.000.

Short, Robert G.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. Process for recovery of high-grade lecithin and solvents from ternary solvent system containing crude vegetable oil. 4,221,731, Cl. 260-403.000.

Shoup, Robert D.; and Wein, William J., to Corning Glass Works. Method of making controlled-pore silica structures for high temperature insulation. 4,221,578, Cl. 65-22.000.

Shuffstall, Richard M. Medical history record filing system. 4,221,404, Cl. 283-1.00A.

Shugart, James F., Jr. Locking device for electric cords. 4,221,449, Cl. 339-75.00P.

Shukla, Jayendra G.: *See*—
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,221,837, Cl. 428-288.000.

Sidebottom, Donald L.; and Stottmann, Richard L., to General Electric Company. Humidity sensor. 4,221,129, Cl. 73-336.500.

Siemens Aktiengesellschaft: *See*—
Deserno, Ulrich, 4,221,981, Cl. 307-425.000.
Franke, Kurt, 4,221,968, Cl. 250-402.000.
Hertz, Walter; and Stroh, Jan, 4,221,942, Cl. 200-148.00R.
Jahrig, Siegfried; and Liebig, Reinhard, 4,221,944, Cl. 200-303.000.
Koch, Harald; Haertenberger, Ludolf; and Hanoefner, Anton, 4,221,374, Cl. 271-4.000.
Kuphal, Wilko, 4,221,371, Cl. 269-327.000.
Troukens, Theodor, 4,222,036, Cl. 340-286.00M.
Von Tomkewitsch, Romuald; and Moser, Otto W., 4,222,041, Cl. 340-517.000.

Silbernagel, John P.: *See*—
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,221,543, Cl. 417-22.000.

Silvertown, Cyril; and Sinclair, Walter, to Lucas Industries Limited. Battery heating system. 4,222,000, Cl. 320-35.000.

Simon, Joachim; Wachholder, Werner; and Seifert, Hans-Georg, to Hostert AutomataDusseldorf GmbH & Co. Feeder magazine for continuously operating film-developing machines. 4,221,346, Cl. 242-55.010.

Simon, Lionel N.; and Hadden, John W., to Newport Pharmaceuticals International, Inc.; and Sloan-Kettering Institute for Cancer Research. Method of imparting immunomodulating and antiviral activity. 4,221,794, Cl. 424-253.000.

Simon, Lionel N.; and Hadden, John W., to Sloan-Kettering Institute for Cancer Research; and Sloan-Kettering Instit. for Cancer Res. P-Acetamidobenzoic acid salts of 9-(hydroxyalkyl) purines. 4,221,909, Cl. 544-265.000.

Sinclair, Walter: *See*—
Silvertown, Cyril; and Sinclair, Walter, 4,222,000, Cl. 320-35.000.

Singer Company, The: *See*—
Albert, William C., 4,221,131, Cl. 73-517.0AV.
Coulombe, Lionel J., 4,221,180, Cl. 112-254.000.
Glass, James L., 4,221,051, Cl. 30-377.000.
Pitchford, Richard L., 4,221,473, Cl. 353-76.000.
Totino, Peter J., 4,221,181, Cl. 112-311.000.

Singer, Richard M.; and Seidl, Charles H., to Kane Manufacturing Corporation. Method for forming a frame. 4,221,038, Cl. 29-160.000.

Sirven, Jacques; and Marchais, Jean-Claude, to Thomson-CSF. Circuit arrangement for eliminating fixed echoes in a pulse. 4,222,049, Cl. 343-7.700.

Sitte, Hellmuth; and Kleber, Heinrich, to C. Reichert Optische Werke, AG. Bearing system for the pivot bar of microtomes particularly ultramicrotomes. 4,221,438, Cl. 308-2.00R.

Siwula, John T. Electronic checkbook. 4,222,109, Cl. 364-715.000.

Sjoberg, Berndt O. H.: *See*—
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,221,781, Cl. 424-114.000.

Sjolund, Roger E. Crab trap. 4,221,071, Cl. 43-100.000.

SKAUT Prefabbricati S.r.l.: *See*—
Caserta, Umberto, 4,221,099, Cl. 52-745.000.

Skeen, Lawrence, to Bauer Bros. Co., The. Vented disc refiner. 4,221,343, Cl. 241-244.000.

Skinner, Timothy J.: *See*—
Hoffman, Robert E.; Skinner, Timothy J.; and Woolley, James M., 4,221,547, Cl. 417-363.000.

Skog, Lars H.: *See*—
Nordkvist, Kjell E.; and Skog, Lars H., 4,221,283, Cl. 192-4.00C.

Sloan, John W.; and Bumb, Frank E., Jr., to Johnston, Sherwood. Method and apparatus for monitoring status of tables in a restaurant. 4,222,111, Cl. 364-900.000.

Sloan, Kenneth B.: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,221,787, Cl. 424-241.000.

Sloan-Kettering Instit. for Cancer Res.: *See—*
Simon, Lionel N.; and Hadden, John W., 4,221,909, Cl. 544-265.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Giner-Sorolla, Alfredo, 4,221,910, Cl. 544-265.000.
Simon, Lionel N.; and Hadden, John W., 4,221,794, Cl. 424-253.000.
Simon, Lionel N.; and Hadden, John W., 4,221,909, Cl. 544-265.000.

Sloan, Noah H. Body cavity examination device. 4,221,225, Cl. 128-750.000.

Slonina, Jean-Pierre; Girard, Pierre; Boucher, Jacques; and Gellon, Joseph, to Le Carbone-Lorraine. Method of obtaining fibre substrates intended for the production of composite bodies. 4,221,622, Cl. 156-93.000.

Smith, Alan, to Platt Saco Lowell Limited. Yarn piecing device for open-end spinning machines. 4,221,110, Cl. 57-263.000.

Smith, Charles C.; and Rougeau, Alvin P., Jr. Electronic time switch. 4,221,978, Cl. 307-252.00B.

Smith, Donald A.; and LaFlesh, Richard C., to Combustion Engineering, Inc. Direct ignition of a fluctuating fuel stream. 4,221,174, Cl. 110-265.000.

Smith, Harman S. Gasket holder clip. 4,221,039, Cl. 29-271.000.

Smith International, Inc.: *See—*
Vezirian, Edward, 4,221,270, Cl. 175-329.000.

Smith, James C.: *See—*
Cunningham, Peter B.; and Smith, James C., 4,221,939, Cl. 179-175.31R.

Smith, Kenneth C., to Teledyne Canada Ltd. Withdrawal of particulate material from a hopper. 4,221,510, Cl. 406-118.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,221,802, Cl. 424-273.00B.

Smith, Lawther O., to Gas Spring Corporation. Gas spring with two-stage damping. 4,221,367, Cl. 267-64.00R.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,221,807, Cl. 424-278.000.

Smith, Peter W.; and Turner, Edward H., to Bell Telephone Laboratories, Incorporated. Nonlinear optical apparatus using fabry-perot resonators. 4,221,472, Cl. 350-356.000.

Smith, Ray E.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,221,837, Cl. 428-288.000.

Smith, Robert L.: *See—*
Cragoe, Edward J., Jr.; Smith, Robert L.; and Stokker, Gerald E., 4,221,790, Cl. 424-246.000.

SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa s.p.a.: *See—*
Lambertini, Giorgio; and Sala, Gianfranco, 4,221,692, Cl. 260-37.00N.

Snow, Lawrence: *See—*
Bettker, Clyde, Jr.; and Snow, Lawrence, 4,221,421, Cl. 296-24.00B.

Sobolewski, George, to Canadair Limited. Articulated railway truck. 4,221,172, Cl. 105-168.000.

S.A. Automobiles Citroen: *See—*
Latchague, Guy, 4,221,315, Cl. 225-97.000.

Societe Anonyme de Telecommunications: *See—*
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,221,699, Cl. 260-45.70S.

Societe Chimique des Charbonnages CdF Chimie: *See—*
Dalens, Marcel; and Haas, Armand, 4,221,830, Cl. 427-256.000.

Societe Civile de Recherches et d'Applications Scientifiques: *See—*
Beguin, Alain, 4,221,795, Cl. 424-256.000.

Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C.: *See—*
Richard, Gerard Y., 4,221,258, Cl. 164-181.000.

Societe des Plastiques de Carmaux SCASAR: *See—*
Dalens, Marcel; and Haas, Armand, 4,221,830, Cl. 427-256.000.

Societe Dite Automobiles Peugeot: *See—*
Latchague, Guy, 4,221,315, Cl. 225-97.000.

Societe Lignes Telegraphiques et Telephoniques: *See—*
Dubois, Gilles; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,221,513, Cl. 409-131.000.

Soeters, Raymond A., Jr., to Eaton Corporation. Control for valve disabiers. 4,221,200, Cl. 123-90.160.

Soeters, Raymond A., Jr., to Eaton Corporation. Control means for valve disabler. 4,221,201, Cl. 123-90.160.

Solar Saver International: *See—*
Everitt, Stanley K., 4,221,059, Cl. 34-93.000.

Solvay & Cie.: *See—*
Hubert, Guy; and Ghyselinck, Philippe, 4,221,759, Cl. 264-520.000.

Sonku, Masahisa: *See—*
Yoshimura, Yukio; and Sonku, Masahisa, 4,221,303, Cl. 220-461.000.

Sony Corporation: *See—*
Fukuda, Yutaka, 4,221,929, Cl. 179-1.00E.

Sorenson, John R. J. Anti-inflammatory and anti-ulcer compounds and process. 4,221,785, Cl. 424-230.000.

Sorkin, Ion B.: *See—*
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.

South African Inventions Development Corporation: *See—*
Louw, Wynand J.; van der Merwe, Douw G.; and Coetzee, Carel J. F., 4,221,980, Cl. 307-255.000.

Spain, Stanley R., to Walter Kidde & Company, Inc. Fail-safe stop arrangement for crane boom extension cable. 4,221,089, Cl. 212-267.000.

Spar Aerospace Limited: *See—*
Kerr, Howard S.; Kettlewell, John R.; Driffield, John B., deceased; and Driffield, Margaret D., administrator, 4,221,966, Cl. 250-338.000.

Spector, George: *See—*
Bracey, Bobby R.; and Spector, George, 4,221,140, Cl. 81-64.000.

Spectra-Physics, Inc.: *See—*
Rando, Joseph F., 4,221,483, Cl. 356-250.000.

Speer, Gary D. Vehicle cover alarm. 4,222,032, Cl. 340-63.000.

Spehrley, Charles W., Jr., to Xerox Corporation. Belt support and control system. 4,221,480, Cl. 355-3.0BE.

Speigel, Kenneth, to GTE Products Corporation. Sealed effusive structure for use in a cathode ray tube. 4,221,991, Cl. 313-481.000.

Spencer, Paul R.: *See—*
Crean, Peter A.; and Spencer, Paul R., 4,222,059, Cl. 346-75.000.

Sperry Corporation: *See—*
Moulton, Robert K.; and Thompson, John W., 4,222,009, Cl. 328-72.000.

Spevack, Jerome S., to Deuterium Corporation. Isotope enrichment systems. 4,221,774, Cl. 423-580.000.

Spicer, John W.: *See—*
Warren, Brian T.; Spicer, John W.; and Miller, Thomas, 4,221,800, Cl. 424-269.000.

SPOFA, United Pharmaceutical Works: *See—*
Grimova, Jaroslava; Nemecek, Oldrich; Kuchar, Miroslav; and Brunova, Bohumila, 4,221,919, Cl. 562-465.000.

Spransy, George B.: *See—*
Braun, Morris; and Spransy, George B., 4,221,495, Cl. 401-213.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicycloоctane derivatives, processes for preparing same and organoleptic uses thereof. 4,221,721, Cl. 260-345.100.

Sprengling, Gerhard R., to Westinghouse Electric Corp. Method of curing phenolic resin in an electrical apparatus without degrading polyethyleneterephthalate insulation also in the electrical apparatus. 4,221,750, Cl. 264-71.000.

Stafsudd, Oscar M.: *See—*
Pedinoff, Melvin E.; Stafsudd, Oscar M.; and Braunstein, Morris, 4,221,464, Cl. 350-152.000.

Stahl, Hans-Otmar: *See—*
Wellenhofer, Herbert; and Stahl, Hans-Otmar, 4,221,755, Cl. 264-169.000.

Stalcup, Robert K.; and Carlson, Russell L., to United Technologies Corporation. Thermally stabilized mirror. 4,221,469, Cl. 350-310.000.

Standard Brands Incorporated: *See—*
Toft, John G., 4,221,842, Cl. 426-550.000.

Standard Oil Company (Indiana): *See—*
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,221,677, Cl. 252-455.00Z.

Stapp, Paul R., to Phillips Petroleum Company. Oxidative esterification process. 4,221,916, Cl. 560-243.000.

Stapp, Paul R., to Phillips Petroleum Company. Production of esters from monoolefins and diolefins. 4,221,917, Cl. 560-246.000.

Steck, Werner: *See—*
Autzen, Horst; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Rudolf, Peter; Sarnecki, Wilhelm; and Steck, Werner, 4,221,776, Cl. 423-634.000.

Stedman, Robert N., to Caterpillar Tractor Co. Apparatus for transporting elongated members. 4,221,525, Cl. 414-460.000.

Stefan, Larry S.; Dearing, Clarence A., Jr.; and Raney, Frank R., to Strade Corporation. Carbide cutting tool. 4,221,511, Cl. 407-117.000.

Steimle, Wayne D. Coupling assembly for plastic tubing. 4,221,407, Cl. 285-236.000.

Stein, Marc T., to Motorola, Inc. Frequency to voltage converter. 4,222,095, Cl. 363-8.000.

Stein, Thomas R.; Heck, Roland H.; and Cabal, Albert V., to Electric Power Research Institute. Hydroprocessing coal liquids. 4,221,654, Cl. 208-15.000.

Steinmann, Manfred: *See—*
Balzau, Gerhard; Kompa, Gunter; Steinmann, Manfred; and Bode, Klaus, 4,221,509, Cl. 406-91.000.

Sterling Drug Inc.: *See—*
Eggensperger, Heinz; Beilfuss, Wolfgang; and Zerling, Wolfgang, 4,221,660, Cl. 210-764.000.

Stern, Joseph L.; and Garodnick, Joseph. Tamper-resistant television signal scrambling. 4,222,067, Cl. 358-118.000.

Stewart, Basil G.; and Stewart, James S. Differential housing and structure. 4,221,138, Cl. 74-607.000.

Stewart, James S.: *See—*
Stewart, Basil G.; and Stewart, James S., 4,221,138, Cl. 74-607.000.

Stires, John C., III. Tamper proof strip chart recorder. 4,222,061, Cl. 346-145.000.

Stock, Don J. R.; and Sartorius, Wilfried, to Endress u. Hauser GmbH u. Co. High frequency transformer. 4,222,016, Cl. 333-24.00R.

Stoeckle, Walter: *See—*
Moser, Werner; v.Tein, Volker; Dirlewanger, Albert; Offenbeck, Hans; and Stoeckle, Walter, 4,221,350, Cl. 244-50.000.

Stoelting, Inc.: *See—*
Martineau, Tom N., 4,221,117, Cl. 62-306.000.
Stoffel, Robert P.; and Ezerski, Bruno J., to Advanced Curing Systems, Inc. Piece part washer. 4,221,228, Cl. 134-199.000.
Stokes, Robert H.: *See—*
Rolleigh, Richard L.; Pruitt, James G.; and Stokes, Robert H., 4,222,114, Cl. 367-153.000.
Stokker, Gerald E.: *See—*
Cragoe, Edward J., Jr.; Smith, Robert L.; and Stokker, Gerald E., 4,221,790, Cl. 424-246.000.
Stolzle, Fritz; and Cmiel, Heinrich. Cross-country-ski binding with automatic locking. 4,221,401, Cl. 280-615.000.
Stone, Raymond J. Cover for a vehicle box. 4,221,423, Cl. 296-100.000.
Stoney, Gerrard J.: *See—*
Riley, Keith; Riley, Kenneth A.; and Stoney, Gerrard J., 4,221,419, Cl. 294-106.000.
Stonitsch, Lawrence J.; and Stonitsch, Richard W. Conduit system with expansion coupling and combined spacer and sealing sleeve. 4,221,405, Cl. 285-53.000.
Stonitsch, Richard W.: *See—*
Stonitsch, Lawrence J.; and Stonitsch, Richard W., 4,221,405, Cl. 285-53.000.
Storrin, Ronald J.: *See—*
Alaimo, Robert J.; Storrin, Ronald J.; and Millner, Ozra E., Jr., 4,221,730, Cl. 260-397.70R.
Stottmann, Richard L.: *See—*
Sidebottom, Donald L.; and Stottmann, Richard L., 4,221,129, Cl. 73-336.500.
Stowe, Alan A. Carrying apparatus. 4,221,313, Cl. 224-46.00R.
Strade Corporation: *See—*
Stefan, Larry S.; Dearing, Clarence A., Jr.; and Raney, Frank R., 4,221,511, Cl. 407-117.000.
Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Polyvinylidene fluoride-polyurethane laminates and method. 4,221,757, Cl. 264-171.000.
Straub, Melvin J.: *See—*
Clampitt, Russell F.; Kalash, Edwin; Schuette, Dennis C.; and Straub, Melvin J., 4,221,349, Cl. 242-192.000.
Strauss, Edgars H.: *See—*
Langen, Marinus J. M.; and Strauss, Edgars H., 4,221,321, Cl. 229-54.00R.
Stroh, Jan: *See—*
Hertz, Walter; and Stroh, Jan, 4,221,942, Cl. 200-148.00R.
Stroud, Frank D.: *See—*
Hurt, Hampton L., 4,221,161, Cl. 93-1.00R.
Strunc, Gerald R.: *See—*
Diesch, Robert E.; and Strunc, Gerald R., 4,221,144, Cl. 83-27.000.
Suga, Michihisa: *See—*
Manabe, Daisuke; Asai, Shuji; and Suga, Michihisa, 4,221,855, Cl. 430-56.000.
Sugimoto, Noboru: *See—*
Aida, Masaaki; Kobayashi, Takashi; Taneda, Yukinori; and Sugimoto, Noboru, 4,221,042, Cl. 29-564.400.
Suhrheinrich, Robert, to Chem-Farm Inc. Whirlfilter. 4,221,667, Cl. 210-304.000.
Sumida, Kunio A. Nibbler accessory for machine tool. 4,221,147, Cl. 83-574.000.
Sumitomo Chemical Company, Limited: *See—*
Kawakami, Shigenao; Tajiri, Shigenori; Tashiro, Hiroshi; and Isaoka, Shin-ichi, 4,221,888, Cl. 525-369.000.
Sakiyama, Kazuo; Ota, Hiroshi; and Kato, Hirosi, 4,221,686, Cl. 260-23.0EP.
Sumner, Emmons F.: *See—*
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,455, Cl. 339-186.00M.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,221,456, Cl. 339-223.00R.
Sundeen, Arthur R., to General Motors Corporation. Potential generating system including an auxiliary direct current potential producing arrangement. 4,222,002, Cl. 322-86.000.
Sunergy Corporation: *See—*
Reale, Salvatore, 4,221,239, Cl. 138-149.000.
Suzuki, Kazuo: *See—*
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,221,179, Cl. 112-158.00E.
Suzuki, Shigeto, to Chevron Research Company. Preparation of diesters. 4,221,918, Cl. 560-263.000.
Suzuki, Shigeto, to Chevron Research Company. Monochloroacetic acid from hydroxyacetic acid. 4,221,921, Cl. 562-603.000.
Suzuki, Takehiko: *See—*
Inoue, Akira; Suzuki, Takehiko; Saito, Koichi; Aoki, Yukio; Ono, Tetsuji; and Ohara, Takashi, 4,221,768, Cl. 423-239.000.
Svecia Silkscreen Maskiner AB: *See—*
Ericsson, Sylve J. D., 4,221,165, Cl. 101-126.000.
Swank, Harry R.: *See—*
Mitchell, Robert B.; and Swank, Harry R., 4,222,075, Cl. 358-246.000.
Swarthout, E. Jack: *See—*
Antholz, Phillip; and Swarthout, E. Jack, 4,221,684, Cl. 260-17.4GC.
Swilley, Wilson H., to LeFiell Company. Method and apparatus for electrical stimulation of an animal carcass. 4,221,021, Cl. 17-45.000.
Swindell, Samuel. Traps for crustaceans. 4,221,070, Cl. 43-100.000.
Swingline, Inc.: *See—*
Medina, Conrad R., 4,221,153, Cl. 85-11.000.
Swinney, Brian: *See—*
Robson, Robert; Swinney, Brian; and Tack, Robert D., 4,221,673, Cl. 252-42.700.
Swisher, George W., Jr.; and Phillips, John F., to CMI Corporation. Roadway breaker plate for a planar apparatus. 4,221,434, Cl. 299-39.000.
Swiss Aluminium Ltd.: *See—*
Severus-Laubenfeld, Harald, 4,221,835, Cl. 428-215.000.
Weber, Rudolf; and Schaper, Hans, 4,221,641, Cl. 204-67.000.
Sybron Corporation: *See—*
Joslyn, Larry J., 4,221,955, Cl. 219-287.000.
Nunlist, Erwin J.; Coleman, Howard G.; and Harrison, Edward S., 4,221,488, Cl. 366-343.000.
Schmidt, Manfred, 4,221,969, Cl. 250-421.000.
Syme, Duncan C., to Vermont Castings, Inc. Heating apparatus having improved combustion. 4,221,207, Cl. 126-77.000.
Szeberenyi, Szabolos: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.
Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.
Tack, Robert D.: *See—*
Robson, Robert; Swinney, Brian; and Tack, Robert D., 4,221,673, Cl. 252-42.700.
Tacke, Peter: *See—*
Humme, Gert; Fahnler, Friedrich; Neuray, Dieter; Ott, Karl-Heinz; and Tacke, Peter, 4,221,879, Cl. 525-66.000.
Tadema, Jan C.; and Domazer, Hans-Gunter, to Wiener & Co. B.V. Device for processing rare earths. 4,221,342, Cl. 241-79.000.
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, to Nisshin Flour Milling Co., Ltd. Anti-ulcer compounds. 4,221,810, Cl. 424-284.000.
Taiyo Yuden Co., Ltd.: *See—*
Kobayashi, Tomiji, 4,221,033, Cl. 29-25.420.
Tajana, Alberto: *See—*
Nardi, Dante; Massarani, Elena; Tajana, Alberto; and Veronese, Mario, 4,221,803, Cl. 424-273.00R.
Tajiri, Shigenori: *See—*
Kawakami, Shigenao; Tajiri, Shigenori; Tashiro, Hiroshi; and Isaoka, Shin-ichi, 4,221,888, Cl. 525-369.000.
Takada, Shunji: *See—*
Okutsu, Eiichi; Akimura, Yoshitaka; Takada, Shunji; and Mifune, Hiroyuki, 4,221,857, Cl. 430-264.000.
Takahashi, Kazuo: *See—*
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,221,864, Cl. 430-572.000.
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Terephthalic acid monoamide derivatives, process for preparing the same, and an anti-allergic agent prepared from the same. 4,221,814, Cl. 424-310.000.
Takami, Toshihiko: *See—*
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,221,611, Cl. 148-26.000.
Takamura, Yoshio: *See—*
Ueda, Joji; Hisamatsu, Hiroshi; and Takamura, Yoshio, 4,221,992, Cl. 315-10.000.
Takasugi, Tamotsu. Machine vise. 4,221,369, Cl. 269-138.000.
Takeda Chemical Industries, Ltd.: *See—*
Idei, Hideji; Iwasaki, Mitsuhiko; Ito, Michio; Hirabayashi, Toshimichi; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,221,560, Cl. 432-99.000.
Takeda, Yasuhisa: *See—*
Takaku, Sakae; Mori, Takashi; Murakami, Yasushi; Ohsugi, Yoshiyuki; Kataoka, Shigeyuki; Takeda, Yasuhisa; Matsuno, Takashi; Iida, Yoshimitsu; Ariga, Akiko; Okazaki, Akira; Igusa, Kazuo; Ogasawara, Toshichika; and Shindo, Minoru, 4,221,814, Cl. 424-310.000.
Takekoshi, Tohru, to General Electric Company. Method for making polyetheramide acid. 4,221,897, Cl. 528-125.000.
Takenoya, Hideaki: *See—*
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,221,177, Cl. 112-158.00E.
Takeuchi, Seiji: *See—*
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Takishima, Yoshiyuki: *See—*
Aizawa, Hiroshi; Uchidoi, Masanori; Kozuki, Susumu; Date, Nobuaki; Shimizu, Masami; and Takishima, Yoshiyuki, 4,221,476, Cl. 354-38.000.
Talres Development (N.A.) N.V.: *See—*
Daniels, Michael J.; and Higginbotham, John D., 4,221,704, Cl. 260-112.00R.
Tamura Electric Works, Ltd.: *See—*
Sato, Susumu; and Hamada, Koji, 4,221,327, Cl. 235-144.0HC.
Tamura, Gakuzo; and Shimizu, Kenichi, to Kyowa Hakko Kogyo Co., Ltd. Antibacterial compounds and process for production thereof. 4,221,908, Cl. 542-426.000.
Tamura, Shuichi, to Canon Kabushiki Kaisha. Camera having focus adjusting device. 4,221,475, Cl. 354-25.000.

Tanaka, Kunimaro: *See—*
Onishi, Ken; and Tanaka, Kunimaro, 4,222,079, Cl. 360-32.000.
Tandy Corporation: *See—*
Kline, Christopher, 4,222,003, Cl. 323-9.000.
Taneda, Yukinori: *See—*
Aida, Masaaki; Kobayashi, Takashi; Taneda, Yukinori; and Sugimoto, Noboru, 4,221,042, Cl. 29-564.400.
Taniguchi, Masao: *See—*
Yamazaki, Eiichi; Kanai, Hiromi; Taniguchi, Masao; and Hirasawa, Shigemi, 4,221,990, Cl. 313-466.000.
Tanikawa, Takayoshi, to Seibu Polymer Kasei Kabushiki Kaisha. Culvert joint. 4,221,502, Cl. 405-126.000.
Tarabanov, Alexandr S.: *See—*
Kostikov, Valery I.; Tarabanov, Alexandr S.; Ivanov, Vitaly A.; and Zykov, Anatoly M., 4,221,831, Cl. 427-314.000.
Tashiro, Hiroshi: *See—*
Kawakami, Shigenao; Tajiri, Shigenori; Tashiro, Hiroshi; and Isaoka, Shin-ichi, 4,221,888, Cl. 525-369.000.
Tateishi, Masakazu: *See—*
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., to Celanese Corporation. Process of making tetrahydrofuran. 4,221,726, Cl. 260-346.110.
Taylor, Robert W.: *See—*
Haynes, Harold G.; and Taylor, Robert W., 4,221,718, Cl. 260-340.50R.
Taylor-Smith, Ernest J. Sub-surface irrigation channel. 4,221,505, Cl. 405-303.000.
Taylor, William D., to Rubbermaid Incorporated. Folding dish drainer. 4,221,299, Cl. 211-41.000.
TDK Electronics Co., Ltd.: *See—*
Nakagawa, Shiro; and Aoi, Toshiki, 4,222,084, Cl. 360-119.000.
Yoda, Minoru; and Tokuoka, Yasumichi, 4,221,614, Cl. 148-105.000.
Tecumseh Products Company: *See—*
Kandpal, Tara C., 4,221,326, Cl. 235-78.00F.
Teledyne Canada Ltd.: *See—*
Smith, Kenneth C., 4,221,510, Cl. 406-118.000.
Telefonaktiebolaget L M Ericsson: *See—*
Avsan, Oleg; and Isaksson, Nils K., 4,222,101, Cl. 364-200.000.
Tennant, John A.: *See—*
Bonikowski, Zbigniew; Keen, Bruce H.; Salamon, Dennis M.; and Tennant, John A., 4,221,947, Cl. 219-10.410.
Tenne, Frank D., to American Cyanamid Company. Method for the control of phytopathogenic fungi using p-(alkoxyalkyl)urea compounds. 4,221,816, Cl. 424-322.000.
Tenne, Frank D., to American Cyanamid Company. Method for the control of phytopathogenic fungi using phenylalkoxyphenylurea compounds. 4,221,817, Cl. 424-322.000.
Terauchi, Kiyoshi, to Sankyo Electric Company Limited. Support mechanism of a wobble plate in a compressor unit. 4,221,545, Cl. 417-269.000.
Terec, Lazar: *See—*
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.
Terning, Thomas N.: *See—*
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Texaco Development Corp.: *See—*
Cuscurida, Michael; Zimmerman, Robert L.; and Ramey, Bobbie J., deceased, 4,221,877, Cl. 521-160.000.
Texas Instruments Deutschland GmbH: *See—*
Heim, Richard; and Fischer, Georg, 4,221,533, Cl. 414-744.00B.
Hoffmann, Johann; Heim, Richard; and Fischer, Georg, 4,221,522, Cl. 414-417.000.
Textielmachinefabriek: *See—*
Gilbos, Georges E., 4,221,031, Cl. 28-281.000.
Thatcher, Richard E., to Philip Morris Incorporated. Apparatus for removal of plastic overwrap from reclaim tobacco. 4,221,035, Cl. 209-44.100.
Thermal-Chem, Inc.: *See—*
Dimmick, Floyd E., 4,221,890, Cl. 525-407.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track tamper. 4,221,169, Cl. 104-12.000.
Thomas, Harold T.: *See—*
Howe, Dennis G.; Thomas, Harold T.; and Lee, James K., 4,222,070, Cl. 358-128.500.
Thome, Michel, to Acieries Thome Cromback. Grinding members. 4,221,612, Cl. 148-35.000.
Thompson, George J.: *See—*
Baron, George B.; Thompson, George J.; and Palm, Michael M., 4,221,531, Cl. 414-694.000.
Thompson, John R., to American Television and Communications Corporation. Subscription television apparatus and methods. 4,222,068, Cl. 358-120.000.
Thompson, John W.: *See—*
Moulton, Robert K.; and Thompson, John W., 4,222,009, Cl. 328-72.000.
Thomson-CSF: *See—*
Hepner, Georges; and Castera, Jean-Paul, 4,221,460, Cl. 350-96.130.
Lacombat, Michel; and Volmier-Desperques, Serge, 4,221,487, Cl. 356-394.000.
Maillard, Gilbert, 4,222,022, Cl. 336-139.000.
Mourier, Georges, 4,221,983, Cl. 310-72.000.
Sirven, Jacques; and Marchais, Jean-Claude, 4,222,049, Cl. 343-7.700.
Thorne, Nathan J. Solar heat exchange panel. 4,221,209, Cl. 126-441.000.
Thorpe, Barrie J.: *See—*
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., 4,221,697, Cl. 260-42.530.
Thorvaldsen, Sverre. Fishing implement. 4,221,067, Cl. 43-18.00R.
Tietz, Werner, to Zeis Ikon AG. Goerzerk. Multi-level lock system and method. 4,221,121, Cl. 70-358.000.
Tinker, Andrew J.: *See—*
Campbell, David S.; Loeber, David E.; and Tinker, Andrew J., 4,221,681, Cl. 260-4.0AR.
Tisone, Thomas C.; and Bolker, Barry F. T., to Gould Inc. Thin film strain gage and process therefor. 4,221,649, Cl. 204-192.00D.
Titus, Theodore, IV: *See—*
Mohammadioun, Said; Wittler, David A.; Titus, Theodore, IV; and Plunkett, Luther C., Jr., 4,221,938, Cl. 179-100.1DR.
Toft, John G., to Standard Brands Incorporated. Snack food process. 4,221,842, Cl. 426-550.000.
Tokas, Edward F., to Monsanto Company. Myrcene as an acrylonitrile scavenger. 4,221,878, Cl. 525-1.000.
Tokas, Edward F., to Monsanto Company. Chemically reducing residual styrene monomer in styrene polymers and shaped products formed therefrom. 4,221,905, Cl. 528-498.000.
Tokuoka, Yasumichi: *See—*
Yoda, Minoru; and Tokuoka, Yasumichi, 4,221,614, Cl. 148-105.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ueda, Joji; Hisamatsu, Hiroshi; and Takamura, Yoshio, 4,221,992, Cl. 315-10.000.
Tokyo Shibaura Electric Company, Limited: *See—*
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,221,554, Cl. 425-7.000.
Toma, Teruo: *See—*
Tsukagoshi, Tsunehiro; Toma, Teruo; Yokozeki, Shinichi; and Yoshino, Toshikazu, 4,221,773, Cl. 423-445.000.
Tomlinson, Dennis E.: *See—*
Bowers, Thomas E.; and Tomlinson, Dennis E., 4,222,013, Cl. 331-1.00A.
Tomy Kogyo Co., Inc.: *See—*
Ozawa, Shoji, 4,221,076, Cl. 46-216.000.
Topfl, Rosemarie, to Ciba-Geigy Aktiengesellschaft. Agent for surface-sizing papers with maleic anhydride copolymers. 4,221,886, Cl. 525-329.000.
Torimae, Yasuhiro; and Ishiai, Tamio, to Kao Soap Company. Abrasive material having a polycarbodiimide and polyurethane resin binder. 4,221,572, Cl. 51-298.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,221,739, Cl. 260-570.0AB.
Toshiba Silicone Co., Ltd.: *See—*
Endo, Isao, 4,221,896, Cl. 528-28.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolos; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, to Richter Gedeon Vegyeszeti Gyar R.T. Amino-substituted nitrobenzophenone derivatives with alkyl, phenyl, phenyl alkyl or cycloalkyl amino-substituting groups. 4,221,739, Cl. 260-570.0AB.
Totino, Peter J., to Singer Company, The. Throat plate for above the bed feed system. 4,221,181, Cl. 112-311.000.
Touch Activated Switch Arrays, Inc.: *See—*
Ledniczki, Ferenc; Patak, Richard J.; and Wayne, Ronald G., 4,221,975, Cl. 307-116.000.
Towle, John H. Line release system. 4,221,417, Cl. 294-83.00A.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Funatsu, Takenori; Inuzuka, Yoichi; Mishina, Tetsuo; Kitamura, Kenji; and Chiba, Ataru, 4,221,606, Cl. 106-288.00Q.
Toyota, Akinori: *See—*
Ushida, Yoshihisa; Odawara, Kiyoshi; Kashiwa, Norio; Toyota, Akinori; and Minami, Syuji, 4,221,894, Cl. 526-125.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Yasui, Toshio; Naito, Motoharu; and Asami, Ken, 4,222,030, Cl. 340-52.00H.
Trayler, Robert J.: *See—*
Freese, Gary P.; and Trayler, Robert J., 4,221,268, Cl. 172-805.000.
Traylor, Paul L. Adapter for coupling passageway and conduit. 4,221,406, Cl. 285-119.000.
Treder, John D.: *See—*
Handen, Carl; Minami, Don S.; and Treder, John D., 4,221,376, Cl. 271-149.000.
Tronzano, Sergio; Raccanelli, Mirco; and Romano, Carlo, to Ing. C. Olivetti & C., S.p.A. Writing and/or reading apparatus for magnetic tape cassettes. 4,222,083, Cl. 360-92.000.
Trotter, James D.; and Rodgers, Thurman J., to American Microsystems, Inc. VMOS Floating gate memory device. 4,222,062, Cl. 357-45.000.
Troukens, Theodor, to Siemens Aktiengesellschaft. Process for assembly of components on printed cards with the use of a position-locating aid. 4,222,036, Cl. 340-286.00M.
Trudel, Wolfgang: *See—*
Kurtz, Rudiger; and Trudel, Wolfgang, 4,221,635, Cl. 162-343.000.
Trujillo, Jose A., to Riguez Associates, a Limited Partnership. Mix design method for asphalt paving mixtures. 4,221,603, Cl. 106-281.00R.

Tsang, Albert C.; and Ainsworth, Oliver C., to Dow Chemical Company, The. Ethylene oxide recovery. 4,221,727, Cl. 260-348.370.
Tschung, Tschae S.: *See*—
Oette, Kurt; and Tschung, Tschae S., 4,221,732, Cl. 260-403.000.
Tsubone, Masahiro: *See*—
Seki, Tatsujiro; Fujii, Motoji; Hayashi, Motoshige; and Tsubone, Masahiro, 4,221,621, Cl. 156-78.000.
Tsuji, Nobuo: *See*—
Naito, Kenji; Ohe, Keitaro; and Tsuji, Nobuo, 4,221,862, Cl. 430-536.000.
Tsukagoshi, Tsunehiro; Toma, Teruo; Yokozeki, Shinichi; and Yoshino, Toshikazu, to Pioneer Electronic Corporation. Method of producing a carbon diaphragm for an acoustic instrument. 4,221,773, Cl. 423-445.000.
Tsunemoto, Daiei: *See*—
Kondo, Kiyoshi; Tsunemoto, Daiei; and Fujisawa, Tamotsu, 4,221,915, Cl. 549-78.000.
Tsutsumi, Zenji: *See*—
Kamo, Yoshihisa; Tsutsumi, Zenji; and Maejima, Hiroshi, 4,222,081, Cl. 360-67.000.
Tuchband, Steve; and Uhoch, John, Jr. Mid-stream urine collection device and package therefor. 4,221,295, Cl. 206-569.000.
Tucker, Elton M., to Metal Bellows Corporation. Implantable infusion apparatus and method. 4,221,219, Cl. 128-260.000.
Tumanov, Jury N.: *See*—
Andrjushin, Alexandr I.; Kuznetsov, Sergei A.; Galkin, Nikolai P.; Tumanov, Jury N.; Kiselev, Boris A.; Sorkin, Ion B.; Dobrovolsky, Vladimir I.; and Butylkin, Jury P., 4,221,762, Cl. 422-186.000.
Tummala, Rao R.: *See*—
Narken, Bernt; and Tummala, Rao R., 4,221,047, Cl. 29-840.000.
Turi, Zoltan: *See*—
Puscas, Ioan; Orban, Ioan; Voicu, Livia; Breazu, Dorin; Pop, Ioan; Ciupe, Iuliu; Terec, Lazar; Butan, Mioara R.; Chiu, Aurel; Lerintiu, Aurel; and Turi, Zoltan, 4,221,783, Cl. 424-127.000.
Turner, Bruce E. Apparatus for demonstrating transmission of nerve impulses. 4,221,062, Cl. 35-49.000.
Turner, Edward H.: *See*—
Smith, Peter W.; and Turner, Edward H., 4,221,472, Cl. 350-356.000.
Turpin, Edward T., to SCM Corporation. Anodic electrocoating compositions. 4,221,647, Cl. 204-181.00R.
Tye, Frank L.; Shaw, John E. A.; and Agopsowicz, Andrzej K., to Berec Group Limited. Dry electric cells. 4,221,853, Cl. 429-224.000.
UCB, Societe Anonyme: *See*—
Rodriguez, Ludovic; and Marchal, Lucien, 4,221,789, Cl. 424-244.000.
Uchida, Isamu, to Laurel Bank Machine Co., Ltd. Packaging paper cutting mechanism for coin packaging machine. 4,221,103, Cl. 53-212.000.
Uchidoi, Masanori: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Kozuki, Susumu; Date, Nobuaki; Shimizu, Masami; and Takishima, Yoshiyuki, 4,221,476, Cl. 354-38.000.
Uebayashi, Takeo: *See*—
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Asamoto, Tetsuhiro; and Uebayashi, Takeo, 4,221,952, Cl. 219-69.00G.
Ueda, Joji; Hisamatsu, Hiroshi; and Takamura, Yoshio, to Asahi Broadcasting Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. Scanning area rotation device for an image pickup tube. 4,221,992, Cl. 315-10.000.
Uehara, Tsutomu: *See*—
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, 4,221,841, Cl. 428-497.000.
Uehara, Yasuo: *See*—
Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, 4,221,695, Cl. 260-42.140.
Ueno, Tsuyoshi: *See*—
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,221,554, Cl. 425-7.000.
Uenoyama, Masaru: *See*—
Okamoto, Michio; Fukumura, Tohru; Ichikawa, Minoru; Uenoyama, Masaru; Ichimura, Masaaki; and Tateishi, Masakazu, 4,222,031, Cl. 340-52.00F.
Uhoch, John, Jr.: *See*—
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Underwood, James R.: *See*—
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Union Carbide Corporation: *See*—
Drago, James A.; and Savitz, Steven R., 4,221,322, Cl. 233-23.00R.
Halstead, Robert W.; and Chaty, John C., 4,221,743, Cl. 568-454.000.
Unique Ingenious Specialties Manufacturing and Sales Inc.: *See*—
Harangozo, Julius, 4,221,442, Cl. 312-294.000.
Uniroyal, Inc.: *See*—
Wheeler, Edward L.; and Jancis, Elmar H., 4,221,702, Cl. 260-45.8RW.
United Aircraft Products, Inc.: *See*—
Wunder, John E.; Hronek, George; and Gaudion, Thomas J., 4,221,261, Cl. 165-74.000.
United Kindgom Atomic Energy Authority: *See*—
Hardwick, William H.; and Gayler, Ronald, 4,221,680, Cl. 252-301.10W.
United Kingdom Atomic Energy Authority: *See*—
Poole, Michael J., 4,221,132, Cl. 73-620.000.
United States of America
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Berlin, Aaron S., deceased; Berlin, Sara L., executrix; Berlin, Howard M., executor; Little, Vincent C.; and Leadore, Toney E., 4,221,167, Cl. 102-69.000.
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Wheeler, Edward L.; and Jancis, Elmar H., to Uniroyal, Inc. 9-Thiabicyclo [3,3,1] nonanediyl-2,6-bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate]. 4,221,702, Cl. 260-45.8RW.
White Consolidated Industries, Inc.: *See*—
Hoffman, Robert E.; Skinner, Timothy J.; and Woolley, James M., 4,221,547, Cl. 417-363.000.
White, Dwain M., to General Electric Company. Block polymers of polyphenylene oxide and polystyrene. 4,221,881, Cl. 525-109.000.
Wick, Gerald H., to Outboard Marine Corporation. Air vane carburetor with adjustable speed. 4,221,202, Cl. 123-378.000.
Wiemers, Norbert: *See*—
Eschwey, Helmut; Galinke, Joachim, deceased; and Wiemers, Norbert, 4,221,685, Cl. 260-22.00A.
Wiener & Co. B.V.: *See*—
Tadema, Jan C.; and Domazer, Hans-Gunter, 4,221,342, Cl. 241-79.000.
Wilde, Geoffrey L.; and Britt, Jack, to Rolls-Royce Limited. Gas turbine jet propulsion engine. 4,221,114, Cl. 60-242.000.
Wildey, Allan J., to Koehring Canada Limited. Tree harvester with saw and shear. 4,221,245, Cl. 144-34.00R.
Wildey Firearms Company, Inc.: *See*—
Hillberg, Robert L., 4,221,066, Cl. 42-71.00P.
Will Ross, Inc.: *See*—
Kebbekus, Earle R., 4,221,569, Cl. 23-232.00C.
Williams, James M., V: *See*—
Williams, James M., IV; and Williams, James M., V, 4,221,530, Cl. 414-673.000.
Williams, James M., IV; and Williams, James M., V. Force-moment compensating apparatus. 4,221,530, Cl. 414-673.000.
Williams, John G.: *See*—
Cornell, Ronald G.; Crane, Bently A.; Hartwell, Walter T.; and Williams, John G., 4,221,933, Cl. 179-6.00C.

Williams, Joseph B.: *See*—
Jaquiss, Donald B. G.; Scott, Steven W.; Vaughn, Howard A., Jr.; and Williams, Joseph B., 4,221,728, Cl. 260-37.0SB.

Williams, Robert D.: *See*—
Young, Vernon V.; Williams, Robert D.; and Ivy, Richard E., 4,221,791, Cl. 424-248.400.

Williams, William H.: *See*—
Nord, Keith W.; Quast, Joseph G.; Williams, William H.; Willmore, Naaman W.; and Benson, Ronald B., 4,221,519, Cl. 414-49.000.

Willis, Brian J.; and Dittrick, John W., to Fritzsche Dodge & Olcott, Inc. Norbornyl-substituted pyran perfumes. 4,221,679, Cl. 252-522.00R.

Willmore, Naaman W.: *See*—
Nord, Keith W.; Quast, Joseph G.; Williams, William H.; Willmore, Naaman W.; and Benson, Ronald B., 4,221,519, Cl. 414-49.000.

Wilson, Max K.: *See*—
Piper, George F.; Vesperman, William C.; and Wilson, Max K., 4,221,756, Cl. 264-174.000.

Wilson, Michael T. Method for fitting a stabilized artificial limb. 4,221,007, Cl. 3-21.000.

Wisniewski, Rafael. Ring and loop puzzle. 4,221,386, Cl. 273-159.000.

Wittler, David A.: *See*—
Mohammadioun, Said; Wittler, David A.; Titus, Theodore, IV; and Plunkett, Luther C., Jr., 4,221,938, Cl. 179-100.1DR.

Woerner, Robert L., to United States of America, Energy. Apparatus for forming targets. 4,221,186, Cl. 118-713.000.

Wolar, William. Means including a light distribution louver for the protection of lighting fixtures. 4,222,094, Cl. 362-279.000.

Wolf, Gerhard D.: *See*—
Elfert, Klaus; Wolf, Gerhard D.; Bentz, Francis; and Kunzel, Hans E., 4,221,903, Cl. 528-341.000.

Wolfson, Ronald I.: *See*—
Hockham, George A.; and Wolfson, Ronald I., 4,222,055, Cl. 343-762.000.

Woll, Harry J.: *See*—
Hannan, William J.; and Woll, Harry J., 4,221,465, Cl. 350-162.0SF.

Wong, Tit-Shing, to Mego Corp. Battery box, particularly for use in toys. 4,221,454, Cl. 339-176.00R.

Woo, Edmund P., to Dow Chemical Company, The. Thermally resistant thermosetting aromatic polymers containing pendant 1-alkynyl substituents. 4,221,895, Cl. 526-270.000.

Woo, Gar L., to Chevron Research Company. Sulfur foam process. 4,221,605, Cl. 106-287.240.

Woods, Quentin T., to FMC Corporation. Apparatus for evacuating and sealing bags. 4,221,101, Cl. 53-79.000.

Woolley, James M.: *See*—
Hoffman, Robert E.; Skinner, Timothy J.; and Woolley, James M., 4,221,547, Cl. 417-363.000.

World Seiko Kabushiki Kaisha: *See*—
Saburi, Kunio, 4,221,501, Cl. 405-37.000.

Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., to Upjohn Company, The. Process for preparing 9α-OH testosterone. 4,221,868, Cl. 435-56.000.

Wright, Donald C.; Marsh, Brian; and Young, Rodney L. D., to Pilkington Brothers Limited. Thermal treatment of glass sheets. 4,221,579, Cl. 65-114.000.

Wright, Howard S. Bathing or shower apparatus. 4,221,009, Cl. 4-366.000.

Wright, Kenneth; and Kenny, Dennis J. Security-type garment hanger. 4,221,298, Cl. 211-4.000.

Wright, Maurice J., to Lucas Industries Limited. Electronic fuel injection control employing gate to transfer demand signal from signal generator to signal store and using discharge of signal store to control injection time. 4,221,194, Cl. 123-478.000.

Writer, Philip L.: *See*—
Dickinson, John D.; and Writer, Philip L., 4,222,118, Cl. 455-70.000.

Wrobel, Gunter: *See*—
Papst, Georg; Schlicker, Volker; and Wrobel, Gunter, 4,221,546, Cl. 417-354.000.

Wunder, John E.; Hronek, George; and Gaudion, Thomas J., to United Aircraft Products, Inc. Brazeless heat exchanger of the tube and shell type. 4,221,261, Cl. 165-74.000.

Wurtinger, Horst: *See*—
Heissler, Herbert; Wurtinger, Horst; and Schaab, Karl H., 4,221,623, Cl. 156-169.000.

Wurtman, Richard J.: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,221,784, Cl. 424-199.000.

Xerox Corporation: *See*—
Crean, Peter A.; and Spencer, Paul R., 4,222,059, Cl. 346-75.000.
Kamath, Venkatesh H.; Malachowski, Michael A.; and Vorndran, Charles P., 4,221,378, Cl. 271-220.000.
Kamath, Venkatesh H.; and Vorndran, Charles P., 4,221,379, Cl. 271-289.000.
Lu, Chin H., 4,221,856, Cl. 430-110.000.
Spehrley, Charles W., Jr., 4,221,480, Cl. 355-3.0BE.

Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Analog-digital conversion method, and a picture reproduction method using the same. 4,222,077, Cl. 358-280.000.

Yamadaya, Shoko: *See*—
Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,221,678, Cl. 252-466.0PT.

Yamaguchi, Noboru: *See*—
Yukuta, Toshio; Ishiwaka, Takumi; and Yamaguchi, Noboru, 4,221,875, Cl. 521-128.000.

Yamaguchi, Teruhito: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,221,810, Cl. 424-284.000.

Yamamoto, Masataka: *See*—
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, 4,221,841, Cl. 428-497.000.

Yamazaki, Eiichi; Kanai, Hiromi; Taniguchi, Masao; and Hirasawa, Shigemi, to Hitachi, Ltd. Phosphor screen for post-focusing type color picture tube. 4,221,990, Cl. 313-466.000.

Yasui, Toshio; Naito, Motoharu; and Asami, Ken, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electric control circuit for safety apparatus in automotive vehicles. 4,222,030, Cl. 340-52.00H.

Yasuoka, Masahiro; and Okada, Yoshitsugu, to Kubota, Ltd. Butterfly valve. 4,221,360, Cl. 251-305.000.

Yoda, Minoru; and Tokuoka, Yasumichi, to TDK Electronics Co., Ltd. Method of manufacturing ferromagnetic magnetic metal powder. 4,221,614, Cl. 148-105.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier device. 4,222,012, Cl. 330-85.000.

Yokozeki, Shinichi: *See*—
Tsukagoshi, Tsunehiro; Toma, Teruo; Yokozeki, Shinichi; and Yoshino, Toshikazu, 4,221,773, Cl. 423-445.000.

Yonekawa, Minoru: *See*—
Ninagawa, Chikato; Ozaki, Tadashi; Yonekawa, Minoru; and Harada, Hitoshi, 4,221,639, Cl. 204-26.000.

Yonezawa, Kazuhiro: *See*—
Nakayama, Niro; and Yonezawa, Kazuhiro, 4,221,655, Cl. 209-211.000.

Yoshida Kogyo K.K.: *See*—
Kanzaka, Yoshihiro, 4,221,026, Cl. 24-205.11R.
Karaki, Takao, 4,221,256, Cl. 160-368.00R.
Oda, Kiyoshi, 4,221,027, Cl. 24-205.14R.

Yoshikawa, Satonovu, to Nakaya Sangyo Kabushiki Kaisha. Liquid spraying device. 4,221,339, Cl. 239-704.000.

Yoshimura, Yukio; and Sonku, Masahisa, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Anticorrosive liquid tank with offset lining joints. 4,221,303, Cl. 220-461.000.

Yoshino, Toshikazu: *See*—
Tsukagoshi, Tsunehiro; Toma, Teruo; Yokozeki, Shinichi; and Yoshino, Toshikazu, 4,221,773, Cl. 423-445.000.

Yost, Gerald H.: *See*—
Chirino, Agustin M.; and Yost, Gerald H., 4,221,604, Cl. 106-286.500.

Young, Daniel J. Flush tank metering device. 4,221,010, Cl. 4-346.000.

Young, Rodney L. D.: *See*—
Wright, Donald C.; Marsh, Brian; and Young, Rodney L. D., 4,221,579, Cl. 65-114.000.

Young, Vernon V.; Williams, Robert D.; and Ivy, Richard E., to International Minerals & Chemical Corp. Substituted quinoxaline dioxides. 4,221,791, Cl. 424-248.400.

Yukuta, Toshio; Ishiwaka, Takumi; and Yamaguchi, Noboru, to Bridgestone Tire Co., Ltd. Flame resistant polyurethane foam and the method for manufacturing the same. 4,221,875, Cl. 521-128.000.

Zagorzycki, Peter E., to SCM Corporation. Humidity responsive control for dryers. 4,221,058, Cl. 34-50.000.

Zahnradfabrik Friedrichshafen AG: *See*—
Liebert, Karl-Heinz, 4,221,159, Cl. 91-467.000.

Zebrowski, Gerald R., to Ferro Corporation. Insulating hot topping material. 4,221,595, Cl. 106-56.000.

Zeelen, Filippus J.; and Groen, Marinus B., to Akzona Incorporated. Cyclization substrates and related 11α-equatorially-substituted steroids. 4,221,713, Cl. 260-239.55R.

Zehnder, Clark R.: *See*—
Hufnagl, Gerhart; and Zehnder, Clark R., 4,221,041, Cl. 29-512.000.

Zeis Ikon AG. Goerzerk: *See*—
Tietz, Werner, 4,221,121, Cl. 70-358.000.

Zelenz, Martin L., to North American Philips Corporation. CATV Subscription service control device and attenuator therefor. 4,222,066, Cl. 358-114.000.

Zerling, Wolfgang: *See*—
Eggensperger, Heinz; Beilfuss, Wolfgang; and Zerling, Wolfgang, 4,221,660, Cl. 210-764.000.

Ziemek, Gerhard, to Kabel- und Metallwerke Gutehoffnungshutte AG. Filter for liquids. 4,221,670, Cl. 210-474.000.

Ziggity Systems, Inc.: *See*—
Hostetler, Eldon, 4,221,188, Cl. 119-72.000.

Ziman, Stephen D., to Chevron Research Company. Herbicidal and plant-growth-regulating N-(heterocyclyl)-methylacetanilides. 4,221,584, Cl. 71-88.000.

Zimmerman, Robert L.: *See*—
Cuscurida, Michael; Zimmerman, Robert L.; and Ramey, Bobbie J., deceased, 4,221,877, Cl. 521-160.000.

Zirps, Wilhelm; and Preun, Hugo, to Robert Bosch GmbH. Hydraulic lifting device for harvesting machines. 4,221,156, Cl. 91-407.000.

Zollinger, Erich, to Balzers Aktiengesellschaft. Electron beam evaporation device for vacuum evaporators. 4,221,629, Cl. 159-28.00R.

Zuchner, Werner: *See*—
Anderka, Gerold; Ritter, Hans-Joachim; and Zuchner, Werner, 4,221,496, Cl. 401-258.000.

Zvenigorodsky, Evgeny I.: *See*—
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; and Zvenigorodsky, Evgeny I., 4,221,506, Cl. 406-30.000.

Zykov, Anatoly M.: *See*—
Kostikov, Valery I.; Tarabanov, Alexandr S.; Ivanov, Vitaly A.; and Zykov, Anatoly M., 4,221,831, Cl. 427-314.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF SEPTEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American/Durein Company: *See*—
Schueler, Marlin A., Re. 30,398, Cl. 225-100.000.

Ammann, Hans H.; and Pfahl, Robert C., Jr., to Western Electric Co., Inc. Method for soldering, fusing or brazing. Re. 30,399, Cl. 228-180.00R.

Bayer Aktiengesellschaft: *See*—
Michael, Dietrich; and Kosiol, Wilfried, Re. 30,402, Cl. 260-37.00N.

Illinois Tool Works Inc.: *See*—
White, Gerald W., Re. 30,401, Cl. 204-192.00N.

King, Donald L. Three-dimensional ultrasonic imaging of animal soft tissue. Re. 30,397, Cl. 128-660.000.

Kosiol, Wilfried: *See*—
Michael, Dietrich; and Kosiol, Wilfried, Re. 30,402, Cl. 260-37.00N.

Michael, Dietrich; and Kosiol, Wilfried, to Bayer Aktiengesellschaft. Self-extinguishing polyamide compositions. Re. 30,402, Cl. 260-37.00N.

Pfahl, Robert C., Jr.: *See*—
Ammann, Hans H.; and Pfahl, Robert C., Jr., Re. 30,399, Cl. 228-180.00R.

Schueler, Marlin A., to American/Durein Company. Burster mechanism. Re. 30,398, Cl. 225-100.000.

Spees, Arthur T. Filing system and elements therefor. Re. 30,396, Cl. 40-380.000.

Western Electric Co., Inc.: *See*—
Ammann, Hans H.; and Pfahl, Robert C., Jr., Re. 30,399, Cl. 228-180.00R.

White, Gerald W., to Illinois Tool Works Inc. Gasless ion plating. Re. 30,401, Cl. 204-192.00N.

Zimmern, Bernard. Globoid-worm compressors. Re. 30,400, Cl. 418-188.000.

LIST OF DESIGN PATENTEES

Acton, Hugh C., to American Seating Company. Office chair. 256,739, 9-9-80, Cl. D6-30.000.

Acton, Hugh C., to American Seating Company. Office chair. 256,740, 9-9-80, Cl. D6-31.000.

Acton, Hugh C., to American Seating Company. Office chair. 256,741, 9-9-80, Cl. D6-31.000.

Allard, Leonard. Toy building block. 256,817, 9-9-80, Cl. D21-108.000.

Allen, John C., 3rd, to S. B. Ramagosa & Sons. Water slide or similar article. 256,827, 9-9-80, Cl. D21-244.000.

Allen, John C., 3rd, to S. B. Ramagosa & Sons. Water slide or similar article. 256,828, 9-9-80, Cl. D21-244.000.

American Equipment Corporation: *See*—
Deen, Darrel B.; Walsted, Lawrence L.; and Roost, F. John, 256,800, Cl. D15-19.000.

American Seating Company: *See*—
Acton, Hugh C., 256,739, Cl. D6-30.000.
Acton, Hugh C., 256,740, Cl. D6-31.000.
Acton, Hugh C., 256,741, Cl. D6-31.000.

Amiot, Jacques H. J., to Moulinex Societe Anonyme. Food processor or similar article. 256,766, 9-9-80, Cl. D7-153.000.

Armco Inc.: *See*—
Madsen, Jens H., 256,843, Cl. D25-74.000.

Bajork, Leonard C. Costume or the like. 256,736, 9-9-80, Cl. D2-79.000.

Beall, Lester, Jr., to Trend Line Furniture Corporation. Seat. 256,742, 9-9-80, Cl. D6-62.000.

Beall, Lester, Jr., to Trend Line Furniture Corporation. Seat. 256,743, 9-9-80, Cl. D6-63.000.

Bechtel, Daniel L. Rifle telescope mount. 256,830, 9-9-80, Cl. D22-7.000.

Bedin, Michel, to Parfums Guy LaRoche. Bottle. 256,774, 9-9-80, Cl. D9-60.000.

Bengt Petersson New Products Investment AB: *See*—
Sorsjo, Nils G., 256,777, Cl. D9-188.000.

Blanchard, Russell O., to Motor Wheel Corporation. Wheel. 256,795, 9-9-80, Cl. D12-209.000.

Bowen, Robert F.; Martel, Thomas J.; and D'Ovidio, Thomas H., to Raytheon Company. Popcorn maker appliance. 256,758, 9-9-80, Cl. D7-85.000.

Bowman, George E.: *See*—
Skyer, Robert A.; and Bowman, George E., 256,801, Cl. D15-33.000.

Braun AG: *See*—
Haase, Heinz-Ulrich, 256,846, Cl. D28-13.000.

Broyles, Marshall W. Trash compactor. 256,770, 9-9-80, Cl. D8-14.000.

Cambra International Ltd.: *See*—
Woodhall, Michael B., 256,737, Cl. D3-35.000.

Chrysler Corporation: *See*—
Dunne, Carroll J.; Knupp, Dwight A.; Scott, Ian J. C.; Golin, Leo; and Tomczak, Lawrence W., 256,799, Cl. D15-5.000.

Coleman, Kelly R. Sign. 256,810, 9-9-80, Cl. D20-10.000.

Conn, Mildred. Candle support cake form. 256,844, 9-9-80, Cl. D26-10.000.

Corbett, Robert E.; and Macklin, Peter T. T. Massager or similar article. 256,841, 9-9-80, Cl. D24-36.000.

CPG Products Corp.: *See*—
McMahon, John F.; and Venditti, Arthur P., 256,816, Cl. D21-89.000.

Crawford, Donald R.; and Crawford, Roy L. Plant pot holder. 256,749, 9-9-80, Cl. D6-152.000.

Crawford, Donald R.; and Crawford, Roy L. Plant pot holder. 256,750, 9-9-80, Cl. D6-153.000.

Crawford, Donald R.; and Crawford, Roy L. Plant pot holder. 256,751, 9-9-80, Cl. D6-153.000.

Crawford, Raymond E. Marble raceway. 256,811, 9-9-80, Cl. D21-12.000.

Crawford, Roy L.: *See*—
Crawford, Donald R.; and Crawford, Roy L., 256,749, Cl. D6-152.000.
Crawford, Donald R.; and Crawford, Roy L., 256,750, Cl. D6-153.000.
Crawford, Donald R.; and Crawford, Roy L., 256,751, Cl. D6-153.000.

Danz, Ellworth R.; and Szalek, Roman J., to General Time Corporation. Travel alarm clock. 256,782, 9-9-80, Cl. D10-18.000.

Dart Industries Inc.: *See*—
Painter, David L.; and Zinkgraf, Robert C., 256,756, Cl. D7-29.000.

Deen, Darrel B.; Walsted, Lawrence L.; and Roost, F. John, to American Equipment Corporation. Portable mixer. 256,800, 9-9-80, Cl. D15-19.000.

DeSousa, Peter. Small animal habitat. 256,847, 9-9-80, Cl. D30-1.000.

Dockery, Florinda A. Purse holding hook. 256,738, 9-9-80, Cl. D3-54.000.

D'Ovidio, Thomas H.: *See*—
Bowen, Robert F.; Martel, Thomas J.; and D'Ovidio, Thomas H., 256,758, Cl. D7-85.000.

Dunne, Carroll J.; Knupp, Dwight A.; Scott, Ian J. C.; Golin, Leo; and Tomczak, Lawrence W., to Chrysler Corporation. Fluid flowmeter housing for an automotive engine fuel metering system. 256,799, 9-9-80, Cl. D15-5.000.

Durango Systems, Inc.: *See*—
Plaza, Mario G., 256,796, Cl. D14-43.000.

Eldon Industries, Inc.: *See*—
Evenson, Mel, 256,809, Cl. D19-75.000.

Electra (Israel) Ltd.: *See*—
Katz, Ami, 256,840, Cl. D23-72.000.

Emmegizeta Metalmeccanica Gori & Zucchi M.G.Z. S.p.A.: *See*—
Mazzini, Giovanni. 256,789, Cl. D11-13.000.

Endo, Koshi: *See*—
Endo, Masaharu; and Endo, Koshi, 256,836, Cl. D22-23.000.
Endo, Masaharu; and Endo, Koshi, 256,837, Cl. D22-23.000.
Endo, Masaharu; and Endo, Koshi, 256,838, Cl. D22-23.000.
Endo, Masaharu; and Endo, Koshi, 256,839, Cl. D22-23.000.

Endo, Masaharu; and Endo, Koshi, to Olympic Fishing Tackle Co., Ltd. Handle for a fishing rod assembly. 256,836, 9-9-80, Cl. D22-23.000.

Endo, Masaharu; and Endo, Koshi, to Olympic Fishing Tackle Co., Ltd. Handle for a fishing rod assembly. 256,837, 9-9-80, Cl. D22-23.000.

Endo, Masaharu; and Endo, Koshi, to Olympic Fishing Tackle Co., Ltd. Fishing rod assembly. 256,838, 9-9-80, Cl. D22-23.000.
Endo, Masaharu; and Endo, Koshi, to Olympic Fishing Tackle Co., Ltd. Fishing rod assembly. 256,839, 9-9-80, Cl. D22-23.000.
Evenson, Mel, to Eldon Industries, Inc. Compartmentalized tray. 256,809, 9-9-80, Cl. D19-75.000.
Fairchild Industries, Inc.: *See—*
McComas, Jean W.; and Rosenthal, Gordon, 256,791, Cl. D12-71.000.
McComas, Jean W.; and Rosenthal, Gordon, 256,792, Cl. D12-71.000.
Fender, C. Leo. Control panel for an electric guitar or the like. 256,803, 9-9-80, Cl. D17-20.000.
Fender, C. Leo. Bridge assembly for stringed musical instruments. 256,804, 9-9-80, Cl. D17-21.000.
Figuered, Earl S. Soap holder. 256,745, 9-9-80, Cl. D6-90.000.
Finley, Lyle, to Golden Gallon, Inc. Building. 256,842, 9-9-80, Cl. D25-17.000.
Flemming, Stephen J. Boomerang. 256,815, 9-9-80, Cl. D21-85.000.
General Strap, Inc.: *See—*
Hofman, Bronislaw L., 256,788, Cl. D11-3.000.
General Time Corporation: *See—*
Danz, Ellworth R.; and Szalek, Roman J., 256,782, Cl. D10-18.000.
Gerber, Eugene; and Zaret, Sol. Paper binding. 256,808, 9-9-80, Cl. D19-65.000.
Golden Gallon, Inc.: *See—*
Finley, Lyle, 256,842, Cl. D25-17.000.
Golin, Leo: *See—*
Dunne, Carroll J.; Knupp, Dwight A.; Scott, Ian J. C.; Golin, Leo; and Tomczak, Lawrence W., 256,799, Cl. D15-5.000.
Haase, Heinz-Ulrich, to Braun AG. Hair dryer with accessory attachments. 256,846, 9-9-80, Cl. D28-13.000.
Harada, Toshio: *See—*
Yamamura, Masamichi; Harada, Toshio; and Takahashi, Hanji, 256,765, Cl. D7-128.000.
Hardy, Terence: *See—*
Litchfield, Leon G.; and Hardy, Terence, 256,752, Cl. D6-191.000.
Harris, Robert W. Bottle. 256,773, 9-9-80, Cl. D9-46.000.
Hazenbroek, Jacobus E. Eviscerator tool. 256,802, 9-9-80, Cl. D15-92.000.
Helgren, Ruth. Fishing rod holder unit. 256,772, 9-9-80, Cl. D8-395.000.
Hofman, Bronislaw L., to General Strap, Inc. Watchstrap. 256,788, 9-9-80, Cl. D11-3.000.
Ikeda, Katsuzo: *See—*
Kitagawa, Ikuo; and Ikeda, Katsuzo, 256,771, Cl. D8-68.000.
Ikeda, Saburo M. Deck of playing cards. 256,814, 9-9-80, Cl. D21-43.000.
Ingledew, Peter: *See—*
Martin, Eric C.; and Ingledew, Peter, 256,761, Cl. D7-94.000.
International Harvester Company: *See—*
Skyer, Robert A.; and Bowman, George E., 256,801, Cl. D15-33.000.
Irelan, Edward A., to McGraw-Edison Company. Handle for a garden lopping shear or the like. 256,767, 9-9-80, Cl. D8-01.000.
Irelan, Edward A., to McGraw-Edison Company. Handle for a garden lopping shear or the like. 256,768, 9-9-80, Cl. D8-05.000.
Irelan, Edward A., to McGraw-Edison Company. Handle for a cordless electric lawn edger, trimmer or similar article. 256,769, 9-9-80, Cl. D8-08.000.
J. T. Baker Chemical Company: *See—*
Seidenberger, James W., 256,832, Cl. D22-19.000.
Seidenberger, James W., 256,833, Cl. D22-19.000.
Seidenberger, James W., 256,834, Cl. D22-19.000.
James, Wilbert R. Tennis racket. 256,823, 9-9-80, Cl. D21-212.000.
Jaramillo, Antonio M. Charm. 256,790, 9-9-80, Cl. D11-56.000.
Johnson, Marshall B., to Wear-Ever Aluminum, Inc. Pressure cooker. 256,759, 9-9-80, Cl. D7-86.000.
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CLASS 180

6.48 4,221,273
69 R 4,221,274
190 4,221,272
206 4,221,275
209 4,221,276
273 4,221,277
283 4,221,278

CLASS 184

11 R 4,221,279

CLASS 187

18 4,221,280

CLASS 191

12 R 4,221,281
68 4,221,282

CLASS 192

4 C	4,221,283
12 BA	4,221,284

CLASS 194

1 G	4,221,285

CLASS 198

377	4,221,286
418	4,221,287
781	4,221,288

CLASS 200

61.45 R	4,221,940
67 A	4,221,941
148 R	4,221,942
	4,221,943
303	4,221,944
316	4,221,945
331	4,221,946

CLASS 202

121	4,221,638

CLASS 204

26	4,221,639
33	4,221,640
67	4,221,641
98	4,221,642
	4,221,643
	4,221,644
159.14	4,221,645
159.19	4,221,646
181 R	4,221,647
186	4,221,648
192 D	4,221,649
192 N	Re.30,401
195 C	4,221,651
195 S	4,221,650
298	4,221,652

CLASS 206

98	4,221,289
219	4,221,290
222	4,221,291
386	4,221,292
494	4,221,293
521	4,221,294
569	4,221,295
600	4,221,296

CLASS 208

8 LE	4,221,653
15	4,221,654

CLASS 209

44.1	4,221,035
211	4,221,655
213	4,221,664
247	4,221,665
576	4,221,297

CLASS 210

104	4,221,669
169	4,221,662
193	4,221,663
236	4,221,666
304	4,221,667
474	4,221,670
522	4,221,671
616	4,221,657
634	4,221,658
635	4,221,668
639	4,221,659
721	4,221,661
764	4,221,660
805	4,221,656

CLASS 211

4	4,221,298
41	4,221,299

CLASS 212

134	4,221,301
192	4,221,300
267	4,221,089

CLASS 219

10.41	4,221,947
10.55 A	4,221,948
10.55 C	4,221,949
10.81	4,221,950
56	4,221,951
69 G	4,221,952
73.2	4,221,957
125.1	4,221,953
212	4,221,954
287	4,221,955
388	4,221,956

CLASS 220

4 F	4,221,302
461	4,221,303

CLASS 221

1	4,221,304
131	4,221,305

CLASS 222

200	4,221,306
428	4,221,307
470	4,221,308
604	4,221,309

CLASS 223

94	4,221,310

CLASS 224

42.08	4,221,311
42.21	4,221,312
45 S	4,221,314
46 R	4,221,313

CLASS 225

97	4,221,315
100	Re.30,398

CLASS 226

35	4,221,316
188	4,221,317
195	4,221,318

CLASS 228

25	4,221,319
180 R	Re.30,399

CLASS 229

19	4,221,320
54 R	4,221,321

CLASS 233

23 R	4,221,322
	4,221,323
26	4,221,324
	4,221,325

CLASS 235

78 F	4,221,326
92 AC	4,221,959
92 T	4,221,958
144 HC	4,221,327
454	4,221,328
458	4,221,329

CLASS 238

31	4,221,330

CLASS 239

121	4,221,331
223	4,221,332
255	4,221,333
394	4,221,334
428.5	4,221,335
	4,221,336
	4,221,337
	4,221,338
704	4,221,339

CLASS 241

7	4,221,340
67	4,221,341
79	4,221,342
244	4,221,343

CLASS 242

18.1	4,221,344
47	4,221,345
55.01	4,221,346
110.2	4,221,347
192	4,221,348
	4,221,349

CLASS 244

50	4,221,350
153 R	4,221,351

CLASS 248

74 PB	4,221,352
292.1	4,221,353
293	4,221,354
340	4,221,355
363	4,221,356

CLASS 249

191	4,221,357

CLASS 250

205	4,221,960
223 B	4,221,961
227	4,221,962
231 SE	4,221,963
290	4,221,964
311	4,221,965
338	4,221,966
363 S	4,221,967
402	4,221,968
421	4,221,969
439 P	4,221,970
505	4,221,971
531	4,221,972
560	4,221,973
563	4,221,974

CLASS 251

144	4,221,358
295	4,221,359
305	4,221,360
331	4,221,361

CLASS 252

42.7	4,221,673
62	4,221,672
141	4,221,674
186	4,221,675
301.1 W	4,221,680
301.6 F	4,221,676
455 Z	4,221,677
466 PT	4,221,678
522 R	4,221,679

CLASS 254

98	4,221,362
	4,221,363
338	4,221,364
398	4,221,365

CLASS 260

4 AR	4,221,681
8	4,221,682
15	4,221,683
17.3	4,221,710
17.4 GC	4,221,684
22 A	4,221,685
23 EP	4,221,686
23 XA	4,221,687
23.5 A	4,221,712
29.2 M	4,221,688
29.3	4,221,689
29.7 R	4,221,690
33.6 SB	4,221,691
37 N	Re.30,402
	4,221,692
37 SB	4,221,693
	4,221,728
40 R	4,221,694
42.14	4,221,695
42.46	4,221,696
42.52	4,221,698
42.53	4,221,697
45.7 PH	4,221,700
45.7 S	4,221,699
45.8 N	4,221,701
45.8 RW	4,221,702
45.9 NC	4,221,703
112 R	4,221,704
112.5 R	4,221,705
	4,221,706
123.5	4,221,707
124 R	4,221,708
165	4,221,709
207.1	4,221,711
239.55 R	4,221,713
244.4	4,221,714
	4,221,715
325 R	4,221,716
333	4,221,717
340.5 R	4,221,718
	4,221,719
343.6	4,221,720
345.1	4,221,721
	4,221,722
345.7 R	4,221,723
345.8 R	4,221,724
	4,221,725
346.11	4,221,726
348.37	4,221,727
396 N	4,221,729
397.7 R	4,221,730
403	4,221,731
	4,221,732
404.5	4,221,733
408	4,221,734
429 C	4,221,735
465.4	4,221,737
465.9	4,221,738
570 AB	4,221,739
584 R	4,221,740

CLASS 261

44 B	4,221,747

CLASS 264

43	4,221,748
45.3	4,221,749
71	4,221,750
119	4,221,751
121	4,221,752
142	4,221,753
164	4,221,754
169	4,221,755
171	4,221,757
174	4,221,756
225	4,221,758
520	4,221,759
524	4,221,760

CLASS 266

197	4,221,366

CLASS 267

64 R	4,221,367

CLASS 269

54.3	4,221,368
138	4,221,369
323	4,221,370
327	4,221,371

CLASS 270

58	4,221,372
86	4,221,373

CLASS 271

4	4,221,374
127	4,221,375
149	4,221,376
183	4,221,377
220	4,221,378
289	4,221,379

CLASS 272

8 N	4,221,380
99	4,221,381

CLASS 273

73 C	4,221,383
73 F	4,221,382
118 D	4,221,384
126 R	4,221,385
159	4,221,386
236	4,221,387
248	4,221,388
262	4,221,389

CLASS 277

12	4,221,390

CLASS 279

123	4,221,391

CLASS 280

1	4,221,396
12 H	4,221,394
79.3	4,221,395
436	4,221,397
444	4,221,398
478 R	4,221,399
602	4,221,400
615	4,221,401
659	4,221,402
806	4,221,403
813	4,221,393
824	4,221,392

CLASS 283

1 A	4,221,404

CLASS 285

53	4,221,405
119	4,221,406
236	4,221,407
276	4,221,408

CLASS 292

322	4,221,409

CLASS 293

21	4,221,410
118	4,221,411
	4,221,412
122	4,221,413

CLASS 294

1 BA	4,221,415
1 CA	4,221,414
17	4,221,416
83 A	4,221,417
90	4,221,418
106	4,221,419

CLASS 296

1 A	4,221,420
24 B	4,221,421
100	4,221,423
146	4,221,424
163	4,221,425
178	4,221,426
181	4,221,427

CLASS 297

110	4,221,428
277	4,221,429
353	4,221,430
445	4,221,431

CLASS 298

1 SG	4,221,432

CLASS 299

4	4,221,433
39	4,221,434

CLASS 301

37 SS	4,221,435
	4,221,436

CLASS 303

6 C	4,221,437

CLASS 307

116	4,221,975
230	4,221,976
238	4,221,977
252 B	4,221,978
255	4,221,979
	4,221,980
425	4,221,981

CLASS 308

2 R	4,221,438
166	4,221,439

CLASS 310

59	4,221,982
72	4,221,983
112	4,221,984
171	4,221,985
344	4,221,986

CLASS 312

11	4,221,440
228	4,221,441
294	4,221,442
306	4,221,443

CLASS 313

42	4,221,987
203	4,221,988
331	4,221,989
466	4,221,990
481	4,221,991

CLASS 315

10	4,221,992
73	4,221,993
224	4,221,994

CLASS 318

287	4,221,996
574	4,221,997
616	4,221,995
661	4,221,998
704	4,221,999

CLASS 320

35	4,222,000

CLASS 322

60	4,222,001
86	4,222,002

CLASS 323

9	4,222,003
44 F	4,222,004

CLASS 324

158 MG	4,222,005
441	4,222,006
458	4,222,007

CLASS 328

28	4,222,008
72	4,222,009
140	4,222,010

CLASS 330

4.5	4,222,011
85	4,222,012

CLASS 331

1 A	4,222,013
107 DP	4,222,014

CLASS 333

1.1	4,222,015
24 R	4,222,016
122	4,222,017
251	4,222,018

CLASS 335

6	4,222,019
153	4,222,020
296	4,222,021

CLASS 336

139	4,222,022
209	4,222,023

CLASS 338

22 R	4,222,024
25	4,222,025
34	4,222,026

CLASS 339

17 M	4,221,444
18 R	4,221,445
49 R	4,221,446
64 M	4,221,447
75 MP	4,221,448
75 P	4,221,449
75 R	4,221,450
105	4,221,451
126 R	4,221,458
143 S	4,221,452
149 R	4,221,453
176 R	4,221,454
186 M	4,221,455
223 R	4,221,456
275 R	4,221,457

CLASS 340

26	4,222,027
52 D	4,222,028
52 F	4,222,031
52 H	4,222,030
52 R	4,222,029
63	4,222,032
64	4,222,033
	4,222,034
167 R	4,222,035
286 M	4,222,036
309.1	4,222,037
365 S	4,222,038
381	4,222,039
384 E	4,222,040
517	4,222,041
546	4,222,042
568	4,222,043
581	4,222,044
628	4,222,045
629	4,222,046
641	4,222,047
747	4,222,048

CLASS 343

7.7	4,222,049
	4,222,050
100 LE	4,222,051
112 R	4,222,052
722	4,222,053
754	4,222,054
762	4,222,055
767	4,222,056

CLASS 346

33 R	4,222,057
75	4,222,058
	4,222,059
140 R	4,222,060
145	4,222,061

CLASS 350

55	4,221,459
96.13	4,221,460
96.20	4,221,461
136	4,221,462
150	4,221,463
152	4,221,464
162 SF	4,221,465
167	4,221,466
215	4,221,467
292	4,221,468
310	4,221,469
319	4,221,470
331 R	4,221,471
356	4,221,472

CLASS 353

76	4,221,473

CLASS 354

23 D	4,221,474
25	4,221,475
38	4,221,476
82	4,221,477
213	4,221,478
275	4,221,479

CLASS 355

3 BE	4,221,480
72	4,221,481

CLASS 356

36	4,221,482
73	4,222,064
250	4,221,483
319	4,221,484
338	4,221,485
357	4,221,486
394	4,221,487

CLASS 357

45	4,222,062
	4,222,063

CLASS 358

113	4,222,065
114	4,222,066
118	4,222,067
120	4,222,068
127	4,222,069
128.5	4,222,070
	4,222,071
	4,222,072
145	4,222,073
149	4,222,074
246	4,222,075
263	4,222,076
280	4,222,077

CLASS 360

9	4,222,078
32	4,222,079
40	4,222,080
67	4,222,081
75	4,222,082
92	4,222,083
119	4,222,084

CLASS 361

80 4,222,085
93 4,222,086
104 4,222,087
172 4,222,088
263 4,222,089
386 4,222,090

CLASS 362

32 4,222,091
80 4,222,092
147 4,222,093
279 4,222,094

CLASS 363

8 4,222,095
44 4,222,096
51 4,222,097
71 4,222,098
101 4,222,099
124 4,222,100

CLASS 364

200 4,222,101
4,222,102
4,222,103
414 4,222,104
518 4,222,105
521 4,222,106
571 4,222,107
608 4,222,108
715 4,222,109
724 4,222,110
900 4,222,111

CLASS 365

189 4,222,112

CLASS 366

343 4,221,488

CLASS 367

87 4,222,113
153 4,222,114

CLASS 368

35 4,221,111
84 4,221,112

CLASS 370

7 4,221,934

CLASS 375

1 4,222,115
55 4,222,116
110 4,222,117

CLASS 400

636.3 4,221,489

CLASS 401

29 4,221,490
33 4,221,491
184 4,221,492
199 4,221,493
213 4,221,494
4,221,495
258 4,221,496

CLASS 403

344 4,221,497

CLASS 404

9 4,221,498
117 4,221,499

CLASS 405

24 4,221,500
37 4,221,501
126 4,221,502
184 4,221,503
303 4,221,504
4,221,505

CLASS 406

30 4,221,506
33 4,221,507
41 4,221,508
91 4,221,509
118 4,221,510

CLASS 407

117 4,221,511

CLASS 408

83.5 4,221,512

CLASS 409

131 4,221,513
291 4,221,514

CLASS 410

26 4,221,422
32 4,221,515

CLASS 414

5 4,221,516
34 4,221,517
46 4,221,518
49 4,221,519
355 4,221,520
375 4,221,521
417 4,221,522
421 4,221,523
439 4,221,524
460 4,221,525
469 4,221,526
517 4,221,527
540 4,221,528
546 4,221,529
673 4,221,530
694 4,221,531
729 4,221,532
744 B 4,221,533
745 4,221,534
785 4,221,535
786 4,221,536
4,221,537

CLASS 415

2 4,221,538

CLASS 416

97 A 4,221,539
97 R 4,221,540
157 R 4,221,541
220 R 4,221,542

CLASS 417

22 4,221,543
269 4,221,544
4,221,545
354 4,221,546
363 4,221,547
418 4,221,548
437 4,221,549
4,221,550
511 4,221,551

CLASS 418

48 4,221,552
61 R 4,221,553
188 Re.30,400

CLASS 422

54 4,221,761
186 4,221,762
197 4,221,763
268 4,221,764

CLASS 423

24 4,221,765
140 4,221,766
179.5 4,221,767
239 4,221,768
320 4,221,769
396 4,221,770
419 P 4,221,771
445 4,221,772
4,221,773
580 4,221,774
634 4,221,776
641 4,221,775

CLASS 424

12 4,221,777
31 4,221,778
78 4,221,779
101 4,221,780
114 4,221,781
127 4,221,782
4,221,783
199 4,221,784
230 4,221,785
241 4,221,786
4,221,787
244 4,221,788
4,221,789
246 4,221,790
248.4 4,221,791
249 4,221,792
250 4,221,793
253 4,221,794
256 4,221,795
4,221,796
258 4,221,797
4,221,798
263 4,221,799
269 4,221,800
270 4,221,801
273 B 4,221,802
273 P 4,221,804
273 R 4,221,803
274 4,221,805
275 4,221,806
278 4,221,807
4,221,808
279 4,221,809
284 4,221,810
288 4,221,811
304 4,221,812
309 4,221,813
310 4,221,814
319 4,221,815
322 4,221,816
4,221,817

CLASS 425

7 4,221,554
89 4,221,555
182 4,221,556

CLASS 426

138 4,221,818
262 4,221,819
410 4,221,820
420 4,221,821
438 4,221,822
550 4,221,842

CLASS 427

4 4,221,823
27 4,221,824
34 4,221,825
96 4,221,826
125 4,221,827
217 4,221,828
222 4,221,829
256 4,221,830
314 4,221,831
319 4,221,832

CLASS 428

92 4,221,833
198 4,221,834
215 4,221,835
220 4,221,836
288 4,221,837
369 4,221,838
413 4,221,839
423.5 4,221,840
497 4,221,841
594 4,221,843
623 4,221,844
670 4,221,845

CLASS 429

29 4,221,846
70 4,221,847
104 4,221,848
112 4,221,849
160 4,221,850
197 4,221,851
211 4,221,852
224 4,221,853
234 4,221,854

CLASS 430

56 4,221,855
110 4,221,856
264 4,221,857
266 4,221,858
285 4,221,859
379 4,221,860
529 4,221,861
536 4,221,862
567 4,221,863
572 4,221,864

CLASS 431

22 4,221,557
183 4,221,558

CLASS 432

18 4,221,559
99 4,221,560
128 4,221,561

CLASS 435

4 4,221,865
4,221,866
32 4,221,867
56 4,221,868
117 4,221,869
119 4,221,870

CLASS 455

70 4,222,118
140 4,222,119
154 4,222,120
164 4,222,121

CLASS 521

29 4,221,871
32 4,221,872
103 4,221,873
108 4,221,874
128 4,221,875
158 4,221,876
160 4,221,877

CLASS 525

1 4,221,878
66 4,221,879
92 4,221,880
109 4,221,881
240 4,221,882
243 4,221,883
314 4,221,884
328 4,221,885
329 4,221,886
332 4,221,887
369 4,221,888
404 4,221,889
407 4,221,890
438 4,221,893
514 4,221,891
531 4,221,892

CLASS 526

125 4,221,894
270 4,221,895

CLASS 528

28 4,221,896
125 4,221,897
168 4,221,898
4,221,899
4,221,900
202 4,221,901
228 4,221,902
341 4,221,903
363 4,221,904
498 4,221,905

CLASS 536

1 4,221,906
118 4,221,907

CLASS 542

426 4,221,908

CLASS 544

265 4,221,909
4,221,910
354 4,221,911

CLASS 546

263 4,221,912
346 4,221,913

CLASS 548

342 4,221,914

CLASS 549

78 4,221,915

CLASS 556

422 4,221,736

CLASS 560

243 4,221,916
246 4,221,917
263 4,221,918

CLASS 562

406 4,221,920
465 4,221,919
603 4,221,921

CLASS 568

314 4,221,741
393 4,221,742
454 4,221,743
4,221,744
931 4,221,745
4,221,746

CLASSIFICATION OF DESIGNS

D2— 79 256,736
D3— 35 256,737
54 256,738
D6— 30 256,739
31 256,740
256,741
62 256,742
63 256,743
69 256,744
90 256,745
130 256,746
132 256,747
144 256,748
152 256,749
153 256,750
256,751
191 256,752
256,753
256,754

201 256,755
D7— 29 256,756
45 256,757
85 256,758
86 256,759
94 256,760
256,761
97 256,762
107 256,763
128 256,764
256,765
153 256,766
D8— 01 256,767
05 256,768
08 256,769
14 256,770
68 256,771
395 256,772
D9— 46 256,773

60 256,774
118 256,775
175 256,776
188 256,777
216 256,778
240 256,779
D10— 6 256,780
256,781
18 256,782
56 256,783
73 256,784
81 256,785
256,786
116 256,787
D11— 3 256,788
13 256,789
56 256,790
D12— 71 256,791
256,792

190 256,793
256,794
209 256,795
D14— 43 256,796
89 256,797
96 256,798
D15— 5 256,799
19 256,800
33 256,801
92 256,802
D17— 20 256,803
21 256,804
D18— 28 256,805
D19— 34 256,806
64 256,807
65 256,808
75 256,809
D20— 10 256,810
D21— 12 256,811

27 256,812
35 256,813
43 256,814
85 256,815
89 256,816
99 256,825
108 256,817
124 256,818
140 256,819
160 256,820
191 256,821
195 256,822
212 256,823
217 256,824
237 256,826
244 256,827
256,828
253 256,829

D22— 7 256,830
10 256,831
19 256,832
256,833
256,834
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